



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
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US EPA RECORDS CENTER REGION 5



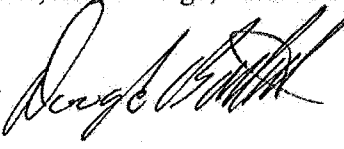
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SEP 20 2016

REPLY TO THE ATTENTION OF:

MEMORANDUM

SUBJECT: ACTION MEMORANDUM – THIRD AMENDMENT: Request for an Exemption from the \$2 Million and 12-month Statutory Limits, Change in Scope of the Response and Ceiling Increase for the Time-Critical Removal Action at the U.S. Smelter and Lead Refinery Site, East Chicago, Lake County, Indiana (Site ID # 053J)

FROM: Douglas Ballotti, Acting Director
Superfund Division 

THRU: Reggie Cheatham, Office Director
Office of Emergency Management (OEM)

TO: Mathy Stanislaus, Assistant Administrator
Office of Land and Emergency Management

I. PURPOSE

The purpose of this Action Memorandum Amendment is to request and document your approval for an exemption from the \$2 million and 12-month statutory limits, to Change the Scope of the Response, document verbal approval for emergency expenditures, and to request a Ceiling Increase for the time-critical removal action at portions of the U.S. Smelter and Lead Refinery Site (the Site) residential area defined as Zone 1 of operable unit 1 (OU1), in East Chicago, Lake County, Indiana (see Figure 2). The sought increase of \$24,469,082 would raise the project ceiling for the time-critical removal action from \$1,928,460 to \$26,397,542. An exemption from the \$2 million and 12-month statutory limits is necessary as the Scope of Response has increased from the previously approved time-critical removal actions. The Change of Scope of the Response and Ceiling Increase is necessary as the previous Action Memorandums approved on January 22, 2008, August 13, 2008, and September 12, 2011 (Attachments IX, X, XI), were for the excavation and proper disposal of lead-contaminated soils from residential properties within OU1 only. Based on subsequent soil data collected during the remedial design for implementation of EPA's Remedial Action selected in a Record of Decision in November 2012, and indoor dust sampling as part of the emergency removal, it has been determined that the inside of residences in the West Calumet Housing Complex (WCHC) need to be cleaned and residents temporarily relocated. Continued response actions are necessary in Zone 1 of OU1 to mitigate threats to public health, welfare, and the environment posed by the release and/or threatened release of hazardous substances from the Site.

On August 2, 2016, verbal authorization to spend up to \$200,000 was granted by the Chief of Emergency Response Branch 1 (ERB 1) for emergency removal actions to begin the testing and removal of lead contaminated dust in the WCHC and conduct temporary relocations of WCHC residents, prioritizing the most sensitive populations. On August 10, 2016, verbal authorization to spend up to an additional \$800,000 was granted by the Region 5 Acting Superfund Director to continue the above activities. The time-critical removal action will continue these activities until all residents of the WCHC are permanently relocated with assistance from the U.S. Department of Housing and Urban Development (HUD). This Action Memorandum requests and seeks your approval to expend up to an additional \$23,469,082, for a total of \$24,469,082, to conduct the selected time-critical removal action within OU1 at the Site.

The response actions proposed herein will continue the efforts made during the emergency removal action and are necessary to mitigate threats to public health, welfare, and the environment posed by the presence of uncontrolled hazardous substances at the Site. This removal involves the testing and removal of lead-contaminated dust in residential homes and the temporary relocation of residents at the WCHC. Conditions existing at the Site present a threat to public health and the environment and meet the criteria for initiating a removal action under 40 CFR § 300.415(b) of the National Contingency Plan (NCP). The U.S. Environmental Protection Agency (EPA or the Agency) documented elevated levels of lead in surface soil in residential yards and dust collected within residential homes at the Site. Lead is a hazardous substance as defined by Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

This removal action involves nationally-significant or precedent-setting issues. This removal may establish a precedent for future response actions and may commit the EPA to a course of action that could have a significant impact on future responses or resources.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID:	IND047030226
RCRA ID:	IND047030226
STATE ID:	None
Category:	Time-Critical Removal

A. Site Description

1. Removal Site Evaluation

The Indiana Department of Environmental Management (IDEM) sampled some of the residential properties to the north of the U.S. Smelter and Lead Refinery, Inc. (U.S.S. Lead) facility in 1985. IDEM found elevated lead levels in these residential yards. In September of 1985, the Indiana State Board of Health found the U.S.S. Lead facility in violation of state law and stated that the lead-contaminated soils within the facility boundaries may pose a risk to human health and the environment. IDEM referred the U.S.S. Lead facility to EPA for cleanup.

From 1993 through 2006, EPA's Resource Conservation and Recovery Act (RCRA) Corrective Action program oversaw the remediation and management of lead-contaminated soils within the boundaries of the U.S.S. Lead facility (OU2). On November 18, 1993, EPA and U.S.S. Lead entered into an Administrative Order on Consent (AOC) pursuant to Section 3008(h) of RCRA. The AOC required U.S.S. Lead to implement interim measures, including site stabilization and construction of a corrective action management unit (CAMU) to contain contaminated soils and slag, and to conduct a Modified RCRA Facility Investigation at the U.S.S. Lead facility. The CAMU covers approximately 10 acres and is surrounded by a subsurface slurry wall. Excavation and construction of the CAMU was conducted in two phases and completed between August and September 2002. Slag generated from the blast-furnace operations was routinely placed by U.S.S. Lead in piles on the southern portion of the property near the banks of the Grand Calumet River. The cleanup of slag was described in the Interim Stabilization Measures Work Plan prepared by ENTACT, LLC and was completed during the third quarter of 2002.

As part of a RCRA Corrective Action in 2003 and 2006, EPA conducted soil sampling in OU1 of the U.S.S. Lead Site. In the late July and early August 2003 investigation, 83 residential properties within OU1 were sampled and analyzed for lead using a Niton X-ray fluorescence (XRF) instrument. Soils from 43 locations (52 percent) exceeded the 400 milligrams per kilogram (mg/kg) residential soil screening criterion for lead. In 2006, EPA's Field Environmental Decision Support (FIELDS) team supplemented the work performed in 2003 by collecting additional data from 14 properties sampled in 2003 to (1) assess whether the top-most soils (zero to one inch below ground surface (bgs)) had elevated lead concentrations relative to deeper soils (one to six inches bgs), (2) collect and compare composite samples to individual samples to assess whether composite samples accurately represented the concentrations in residential yards and parks, and (3) compare lead concentrations in the fine and coarse fractions of sieved samples to evaluate whether lead was preferentially distributed in the fine-grain sizes. These sampling results showed some yards to have high levels of lead contamination with the highest sample containing lead at 3,000 mg/kg. The RCRA Corrective Action program looked at the possible source of the lead contamination and determined it was from various industrial sources. The RCRA Corrective Action program referred the off-site (OU1) contamination from the U.S.S. Lead facility to the Superfund Program in 2004 and the remainder of the on-site (OU2) contamination in 2006.

Consistent with the OSWER Publication 9285.7-50 *Superfund Lead-Contaminated Residential Sites Handbook* (Handbook) (2003), the Superfund Program used a tiered approach to prioritize which homes needed to be cleaned up first. Residential properties with lead concentrations in surface soil at or greater than 1,200 mg/kg would be the highest priority for immediate action under a time-critical removal action. Residential properties with lead concentrations in surface soil below 1,200 mg/kg, but above 400 mg/kg would be addressed through remedial actions. EPA does not consider the 1,200 mg/kg concentration as an action level for removal actions, but it is intended to provide an alternative to running the Integrated Exposure Uptake Biokinetic (IEUBK) model with limited data if the site poses an urgent threat. On January 22, 2008, EPA signed the original action memorandum to conduct a time-critical removal action in OU1 to address known properties with lead levels in surface soil exceeding 1,200 mg/kg. These properties had been identified as part of the RCRA Corrective Action residential investigation. EPA identified 15 private properties that contained soil with lead concentrations exceeding 1,200

mg/kg in the top six inches of soil. On June 9, 2008, EPA initiated the time-critical removal action to address the 15 residential properties with lead levels exceeding 1,200 mg/kg. On August 13, 2008, EPA amended the original action memorandum to increase the project ceiling by \$511,950 for a total of \$984,060. EPA was able to obtain access agreements and remediate only 13 of the 15 properties. The removal action was completed on November 18, 2008. In total, 1,838 tons of lead-contaminated soil were removed and disposed of at an approved landfill.

A Remedial Investigation (RI) was conducted from 2009 through 2010 to collect additional soil data in Zone 1, as well as Zone 2 and Zone 3. As a result of the sampling, EPA discovered an additional 14 areas within OU1 with lead levels exceeding 1,200 mg/kg. On September 11, 2011, EPA signed the second amendment to the original action memorandum which increased the total project ceiling to \$1,928,460. On October 11, 2011, EPA started the time-critical removal action involving lead-contaminated soil removals at 5 WCHC addresses and 9 other residential properties outside the WCHC. In addition, 2 properties that were not remediated during the previous Removal Action in 2008 because of access issues were remediated during this removal action. The removal action was completed on December 9, 2011. In total, 1,913 additional tons of lead-contaminated soil were removed and disposed of at an approved landfill as a result of the 2011 removal activities.

In November 2012, EPA issued a Record of Decision (ROD) for Operable Unit 1 of the Site. OU1 has been divided into 3 separate zones for implementation of the remedy. OU1 contains residential yards contaminated with lead and arsenic at levels that pose a threat to human health through ingestion, inhalation and direct contact. EPA's selected remedy for OU1 addresses these risks from exposure to contaminated soils through the excavation and off-site disposal of lead or arsenic contaminated soils. The remedial action levels (RALs) for OU1 are 400 mg/kg for lead at residential properties, 800 mg/kg for lead at industrial/commercial properties, and 26 mg/kg for arsenic at both residential and industrial/commercial properties.

From November 2014 through April 2015, EPA conducted more extensive soil sampling within Zone 1 as part of the remedial design process for OU1 and completed remedial designs for Zone 1 in October 2015. Zone 1 includes approximately 118 separate "parcels," including 111 properties in the WCHC, three right-of-way parcels, and a school, park, recreation center, and maintenance facilities. EPA sampled all parcels in Zone 1 except a narrow strip of land on the east bank of the Indiana Harbor Canal. In May 2016, EPA received validated sampling results which revealed lead concentrations in soil up to 24 inches in depth ranged from non-detect (ND) to 91,100 mg/kg for lead. Arsenic concentrations ranged from ND to 3,530 mg/kg (See Attachment V – Summary of OU1 RD Soil Sampling Results). Within Zone 1, a total of 117 properties exceeded the removal management level (RML) for lead of 400 mg/kg for residential soil and 61 properties exceeded the RML for arsenic of 68 mg/kg. Each of the properties that exceeded the RML for arsenic also exceeded the RML for lead. Sample results from surface soils (0-6") indicated that lead concentrations at 13 properties in the WCHC exceed 5,000 mg/kg with concentrations up to 45,000 mg/kg.

In early July 2016, EPA began covering bare soils within the WCHC with wood mulch to minimize the direct contact threat and the potential for migration of soil with elevated lead

levels. The work was conducted as part of the remedial action for OU1. The mulching work was completed on July 22, 2016.

On July 29, 2016, EPA initiated in-house sampling for dust collection to determine lead concentrations in homes given the elevated levels of lead in surface soils within the WCHC and the likelihood that lead contaminated soil/dust was being tracked or blown into the housing units. EPA initially targeted 50 residences for indoor dust vacuum sampling. Most of the 50 residences were selected based on the likelihood that they would have elevated lead levels in indoor dust, based on elevated lead concentrations in yards and elevated blood lead level (BLL) records associated with those residences. EPA received access to and vacuum sampled indoor dust at 40 of the targeted 50 units, as well as 2 additional units, at the request of those residents. Concentrations from the first 42 homes sampled ranged from 43 to 1,600 mg/kg for lead fines and 1.8 to 31 mg/kg for arsenic fines (See Attachment VI – Summary of Indoor Dust Sampling Results). Data results from indoor dust from the first 42 homes indicate 26 properties exceed the EPA screening level of 316 mg/kg for lead for indoor living spaces (See Attachment VII – Indoor Dust Screening Criteria).

The Indiana State Department of Health (ISDH) accompanied EPA into 14 of the initial 42 residences and conducted a separate inspection for compliance with lead paint abatement policies. Wipe samples were collected from floors, interior window sills, and window troughs and compared to HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (2012 Edition)(40 µg/ft²-floors, 250 µg/ft²-window sills, and 400 µg/ft²-window trough). Wipe samples from 6 of the 14 units sampled were above the respective lead dust clearance standards (see Attachment VIII – Indiana State Department of Health Wipe Sample Results). Lead based paint was not found by ISDH in any of the inspected units.

The Agency for Toxic Substances and Disease Registry (ATSDR) is working with the East Chicago Health Department (ECHD), which is conducting an ongoing exposure investigation of blood lead in the WCHC. The following is a summary of the findings from screenings of children living in the WCHC, which is derived both from historical data and from the on-going blood lead testing campaign being conducted by ECHD:

- From the most recent ECHD testing in summer 2016, 18 out of 94 (19%) tested children from the WCHC under age 6 were identified with elevated blood lead (EBL) levels (> 5 µg/dL), based on capillary (finger stick) measurements.
- From 2014 through 2015, 26% of children under age 7 tested at the WCHC were identified with EBL levels, with the highest measurement at 33 µg/dL in a 1 year old child. Within the same period, the census tract that includes all of the children from the WCHC (Zone 1) and part of Zone 2 had an EBL incidence rate of 22%. By comparison, the EBL rates for the 2 adjacent census tracts were 9% and 11%.
- The ATSDR Exposure Investigation conducted in the West Calumet neighborhood in 1997 showed a 35% EBL incidence rate, which was defined at that time as greater than 10 µg/dL.

These observations by ATSDR across almost 20 years demonstrate a consistent pattern of elevated blood lead levels in young children living in the WCHC. Given that the ISDH Lead Inspectors found no lead-based paint in several recently sampled units, it is likely that exposure to soil-based lead contamination in the WCHC is a primary cause of elevated blood lead levels in children there.

In August 2016, ECHA submitted an application to HUD that calls for the demolition of the WCHC, relocation of all residents, and disposition of the WCHC property. HUD has approved funds for vouchers to relocate residents effective September 1, 2016. HUD is still considering the portion of the application that pertains to the demolition of structures. EPA cannot predict when all residents will be able to leave the WCHC.

2. Physical Location

The U.S.S. Lead Site lies approximately 18 miles southeast of Chicago, Illinois, in East Chicago, Indiana (Figure 1). The Site consists of the former U.S.S. Lead facility located at 5300 Kennedy Avenue, East Chicago, Indiana (designated as Operable Unit 2 (OU2)) and the residential area to the north and northeast (defined as OU1). OU1 is bound by East Chicago Avenue on the north, East 151st Street/149th Place on the south, the Indiana Harbor Canal on the west, and Parrish Avenue on the east. OU1 includes about 1200 homes, a small number of parks, open space as a part of the railroad right-of-way, schools, and public buildings. For the purpose of implementing the remedial action (RA) in OU1, EPA has divided OU1 into three distinct geographic areas (Zones 1, 2, and 3). This removal action is taking place in the WCHC area of Zone 1 within the Site. Zone 1 is generally bordered: (1) on the north by the northern boundary of the Carrie Gosch Elementary School and a line extending eastward from that boundary to the eastern edge of a north/south utility right of way that runs parallel to McCook Avenue north of East 149th Place; (2) on the east by: (i) the eastern-most edge of a north/south utility right of way that runs parallel to McCook Avenue until East 149th Place, and (ii) McCook Avenue between East 149th Place and 151st Street; (3) on the south by East 151st Street; and (4) on the west by the Indiana Harbor Canal. The geographical coordinates of WCHC are 41.625676 North latitude and - 87.461557 West longitude.

EPA conducted an EJ analysis for the Site (see Attachment I). Screening of the surrounding area was conducted using Region 5's EJ Screen Tool. Region 5 has reviewed environmental and demographic data for the area surrounding the U.S.S. Lead Site and has determined there is high potential for EJ concerns at this location.

3. Site Characteristics

OU1 includes about 1200 homes, a small number of parks, open space as a part of the railroad right-of-way, schools, and public buildings. OU1 is primarily a residential area, with commercial and light industrial areas nearby. Some properties in the residential area in Zones 1, 2 and 3 have levels of lead above EPA's RML of 400 mg/kg and arsenic above the RML of 68 mg/kg.

United States Geological Survey (USGS) historical aerial photographs from 1939, 1951, 1959, and 2005 show OU1 over time. Review of these aerial photographs indicates that the majority of the residential neighborhoods within the Site, west of the railroad tracks, were built before 1939. By 1951, approximately 75 to 80 percent of the homes were built; and by 1959, most of the homes east of the railroad tracks had been built. These photographs also show that the Anaconda Copper Company (whose successor in interest is now the Atlantic Richfield Company (ARC)) occupied the area where the WCHC is currently located (Zone 1 in the southwest portion of OU1) prior to 1959. Title records indicate that the East Chicago Housing Authority constructed the WCHC on the former Anaconda Copper Company site between 1970 and 1973.

The U.S.S. Lead facility was a primary and secondary smelter of lead in the East Chicago, Indiana area. It began operations around 1906 and ended operations in 1985. From about 1920 until 1973, the facility was a primary smelter of lead. This included a refining process to create high quality lead free of bismuth. From 1973 until its closure in 1985, the facility was a secondary smelter and a reprocessor of car batteries. The secondary refinery operations included: battery breaking with tank treatment of spent battery acid at a rate of 16,000 gallons per day; baghouse dust collection with storage in on-site waste piles of up to 8,000 tons of flue dust; and blast furnace slag disposal, which was deposited in the wetland adjacent to and along the southern boundary of the facility. The blast-furnace baghouse collected approximately 300 tons of baghouse flue dust per month during maximum operating conditions. Some of the flue dust escaped the baghouse capture system and was deposited by the wind within the boundaries of OU1. Secondary lead recovery operations ceased in 1985.

In addition to the U.S.S. Lead facility operation, other industrial operations have managed lead and other metals and are sources of contamination in OU1. Immediately east of the U.S.S. Lead facility and south of Zone 3, across Kennedy Avenue, is the former DuPont site (currently leased and operated by W.R. Grace & Co., Grace Davison). One of the processes that historically took place at the DuPont site was the manufacturing of the pesticide lead arsenate.

North of the former U.S.S. Lead facility stood two smelter operations, which handled lead and other metals. A 1930 Sanborn Map identifies the operations as Anaconda Lead Products and International Lead Refining Company (referred to as the former Anaconda facility). Anaconda Lead Products was a manufacturer of white lead and zinc oxide and the International Lead Refining Company was a metal refining facility. These facilities consisted of a pulverizing mill, white lead storage areas, a chemical laboratory, a machine shop, a zinc oxide experimental unit building and plant, a silver refinery, a lead refinery, a baghouse, and other miscellaneous buildings and processing areas.

The residential area that comprises OU1, including the WCHC, has been contaminated by operations conducted by Anaconda Lead Products and International Lead Refining Company on property within OU1. Other industrial sources of contamination at the WCHC include aerial deposition of windblown contaminants from the U.S.S. Lead facility and other local industrial facilities. The focus of this time-critical removal action is the WCHC area within Zone 1, which has approximately 346 family units in various configurations including quads, duplexes and single family homes.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

The threat is presented by the presence of lead-contaminated soil in residential yards and lead contaminated dust within the residences. The presence of lead in outdoor soils and indoor dust at concentrations above health screening values provides a constant source of exposure for individuals both outside and while in the home. Lead is a hazardous substance as defined by section 101(14) of CERCLA. *See* 40 C.F.R. § 302.4. Historic smelter and lead processing operations caused extensive lead contamination in soils throughout the Site. The removal is responding to actual and potential outdoor lead contamination, as well as indoor lead contamination caused by the migration of lead contaminated soil from outdoors to indoors. The presence of extremely elevated lead levels in surface soils and lead in indoor dust in many of the units sampled at concentrations above EPA's site specific screening level of 316 mg/kg, makes this a time-critical removal action. In addition, wipe sample results from ISDH found 6 out of 14 units with lead levels exceeding HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (2012 Edition) (40 µg/ft²-floors, 250 µg/ft²-window sills, and 400 µg/ft²-window trough).

Exposure may occur from direct ingestion of soil in yards, soil tracked indoors, or house dust; and inhalation of fugitive dust. Potential human receptors include residents, including children under six years of age and pregnant or nursing women.

5. NPL status

The U.S.S. Lead Site consisting of both the former U.S.S. Lead facility (OU2) and the West Calumet neighborhood to the north (OU1) was listed as a Superfund site on the national priorities list (NPL) on April 8, 2009. EPA began the RI for OU1 on June 26, 2009. During December 2009 and August 2010, EPA contractors sampled yards in residential areas and background locations. In June 2012, EPA completed a preliminary investigation and study to determine the level and extent of lead and arsenic contamination within OU1 and proposed a remedy. In November 2012, after considering comments received from the City and IDEM, EPA outlined the long-term permanent cleanup plan in a Record of Decision for OU1.

In November 2014, EPA and the Department of Justice secured from the responsible parties a commitment to pay the costs incurred to clean up Zone 1 and Zone 3 of OU1. The long-term cleanup called for removing contaminated soil to depth of 2 feet in any area that was not covered by streets, sidewalks, residences, or other barriers to exposure and replacing it with clean soil. The EPA has completed the remedial designs for work in Zone 1 and is in the process of completing the remedial designs for Zone 3.

6. Maps, pictures and other graphic representations

Maps include:

Figure 1 – Zone 1 Location Map

Figure 2 – OU1 – Location Map

B. Other Actions to Date

1. Previous actions

On January 22, 2008, EPA signed the original action memorandum to conduct a time-critical removal action in OU1 to address known properties with lead levels exceeding 1,200 mg/kg. These properties were identified based on sampling data collected during the RCRA Corrective Action investigation. That removal action began on June 9, 2008, and involved the excavation and off-site disposal of lead-contaminated soil from 15 residential properties. On August 13, 2008, EPA amended the original action memorandum to increase the project ceiling in order to complete the ongoing, time-critical removal action. EPA was able to obtain access agreements and remediate only 13 of the 15 properties. In total, 1,838 tons of lead-contaminated soil were removed and disposed of at an approved landfill. Excavated areas were backfilled with clean fill and seeded. This removal action was completed on September 25, 2008, and the final Pollution Report was issued on November 18, 2008.

On September 12, 2011, EPA signed an action memorandum to conduct a time-critical removal action in Zones 1, 2, and 3 of OU1 to address 16 properties (including the 2 that were missed in 2008) with lead levels exceeding the removal action limit of 1,200 mg/kg. These properties were identified based on sampling data collected during the RI. This removal action began on October 24, 2011, and involved the excavation and off-site disposal of lead contaminated soil from 16 residential properties. In total, 1,913 tons of lead-contaminated soil were removed and disposed of at an approved landfill. Excavated areas were backfilled with clean fill and seeded. This removal action was completed on December 9, 2011, and the final Pollution Report was issued on December 15, 2011.

2. Current actions

On July 11, 2016, EPA started remedial action activities to cover bare soils with wood mulch within the WCHC to minimize fugitive dust, direct contact and potential migration of soil with elevated lead levels. The mulching work was completed on July 22, 2016, although maintenance of the mulch cover is ongoing as part of the remedial work associated with the implementation of the ROD for OU1.

On July 29, 2016, EPA initiated in-house sampling for dust collection to determine lead concentrations in homes. EPA initially targeted 50 residences for indoor dust sampling. Most of the 50 residences were selected based on the likelihood that they would have elevated lead levels in indoor dust, based on elevated lead concentrations in yards and elevated BLL records associated with those residences. ISDH conducted a separate inspection of fourteen of the identified residential units for compliance with lead paint abatement policies. Lead based paint was not found in any of the inspected units. EPA received access to and sampled for indoor dust in 40 of the targeted 50 units, plus an additional 2 units at the request of the residents.

C. State and Local Authorities' Roles

1. State and Local Actions to Date

On August 24, 2016, Rex Osborn, Federal Programs Section Chief with IDEM, sent an email indicating the State of Indiana does not have the financial resources to eliminate the threat posed by lead-contaminated soil in yards and dust within the residences or to fund temporary relocations. Neither the State of Indiana, the City of East Chicago nor the East Chicago Housing Authority have taken action to abate the immediate threat.

2. Potential for Continued State/Local Response

The EPA is working with ATSDR, HUD, the East Chicago Housing Authority, the East Chicago Health Department, the Indiana State Department of Health, and City of East Chicago elected officials to disseminate information to the public. EPA is coordinating discussions with stakeholders regarding the elevated levels of lead and EPA's plans to address this issue. Neither the state nor local officials have the resources to conduct the necessary cleanup of the indoor dust contamination or to provide for the temporary relocation of residents. ECHA and HUD will be working together to permanently relocate residents.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at Zone 1 of the U.S.S. Lead Site present a threat to the public health or welfare and the environment and meet the criteria for a time-critical removal action as provided for in the NCP, 40 C.F.R. § 300.415(b)(1), based on the factors in 40 C.F.R. § 300.415(b)(2). These factors include, but are not limited to, the following:

§ 300.415(b)(2)(i) - Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

EPA is currently addressing exposure to lead contaminated soil in yards and indoor dust. High lead concentrations in indoor dust are a risk to human health, particularly for children under the age of six (who may be exposed through inhalation or ingestion). A recent blood lead study conducted by ECHD found that children in the WCHC are at an increased risk for lead exposure (19% at or above 5 µg/dL compared to the national average of 2.5%).

Lead is a hazardous substance, as defined by Section 101(14) of CERCLA. The effects of lead are the same whether it enters the body through breathing or swallowing. Lead can affect almost every organ and system in the body. The main target for lead toxicity is the nervous system, both in adults and children. Long-term exposure of adults can result in decreased performance in some tests that measure functions of the nervous system. It may also cause weakness in fingers, wrists, or ankles. Lead exposure also causes small increases in blood pressure, particularly in middle-aged and older people and can cause anemia. Exposure to high lead levels can severely damage the brain and kidneys in adults or children and ultimately cause death. In pregnant

women, high levels of exposure to lead may cause miscarriage. High-level exposure in men can damage the organs responsible for sperm production.

§ 300.415(b)(2)(iv) - High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

EPA soil sampling during the remedial design process identified lead in the top six inches of soil above the RML of 400 mg/kg in 74% of the yards sampled in Zone 1, and above 1,200 mg/kg in 32% of those yards, with some concentrations up to 45,000 mg/kg. Lead levels for surficial outdoor soils ranged between 90 to 45,000 mg/kg and from 50 to 1,600 mg/kg for indoor dust that resulted from migration of these contaminated soils. Individual properties are not fenced and children are observed moving throughout the WCHC, increasing the potential for contact with high levels of lead in soil and tracking the lead soil back to their homes. Grass cover is generally lighter in the early spring and fall, allowing more potential of tracking contaminated soil into the home.

§ 300.415(b)(2)(v) - Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;

There is a threat of release from high winds dispersing surface particulate matter containing lead, resulting in exposure to children and adults who reside within the Site. Grass cover is generally lighter in the early spring and fall, allowing more potential of tracking contaminated soil into the home. Rain or thundershowers may cause the outdoor lead to migrate via surface runoff. The use of an air conditioner during the hot summer months or running a furnace during the winter would also result in the migration of indoor dust.

§ 300.415(b)(2)(vii) - The availability of other appropriate federal or state response mechanisms to respond to the release;

At this time, no local or state agency has the resources to respond to the immediate threat.

IV. EXEMPTION FROM STATUTORY LIMITS

Section 104(c) of CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), limits a Federal response action to 12 months and \$2 million unless response actions meet emergency and/or consistency exemptions. Based on cost accounting at other lead removal sites, the number of anticipated properties needing to be cleaned up, and anticipated scope of the temporary relocations, the total cost is expected to exceed \$2 million and take longer than 12-months to implement. The quantities and levels of hazardous substances (lead) found in Zone 1 at the Site warrant application of the \$2 million and 12-month time frame exemptions.

The conditions present at the Site warrant an emergency exemption to the statutory limits based on the following factors:

Emergency Exemption:

A. There is an immediate risk to public health or welfare or the environment;

Concentrations of lead in soil represent an immediate risk to public health. As documented during the Remedial Investigation and the Remedial Design, EPA detected lead above 400 mg/kg at 74% of the properties sampled in Zone 1. Lead was detected at a residential property at a maximum concentration of 45,000 mg/kg in surficial soil. Lead levels for indoor dust ranged between 50 to 1,600 mg/kg. Lead was found above the EPA site-specific screening level of 316 mg/kg in indoor dust in 26 out of 42 units sampled. Wipe sample results from ISDH found 6 out of 14 units with lead levels exceeding HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing. Individual properties are not fenced and children are observed moving throughout the WCHC, increasing the potential for contact with high levels of lead in soil and tracking the lead soil back to their homes. Grass cover is generally lighter in the early spring and fall, allowing more potential of tracking contaminated soil into the home. According to data collected by ECHD and summarized by ATSDR, the residents of the area around the WCHC had an EBL incidence rate of 19%. By comparison, the EBL rates for the 2 adjacent census tracts were 9% and 11%. The BLL data confirms an immediate risk to public health.

B. Continued response actions are immediately required to prevent, limit, or mitigate an emergency;

The high concentrations of lead in soil and indoor dust constitute an imminent threat to human health as documented above. Continued response actions are immediately required to mitigate exposure to nearby residents to hazardous substances through indoor dust and through the soil pathway. The residential yards have high accessibility to sensitive populations, including young children under the age of 6 years and pregnant women. In fact, these sensitive populations live in many of these residences and young children have been observed playing in the contaminated yards. Adults and children may be exposed to high levels of lead from normal foot traffic, yard work, and play. The response actions will prevent, limit, and mitigate threats to human health including sensitive populations.

C. Assistance will not otherwise be provided on a timely basis.

Neither state nor local agencies have the resources to conduct this work. Without this removal action by EPA, assistance will not be provided on a timely basis.

V. ENDANGERMENT DETERMINATION

Given the Site conditions, the nature of the known and suspected hazardous substances on-site, and the potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

VI. PROPOSED ACTIONS

A. Proposed Actions

1. Proposed action description

The response actions described in this memorandum directly address actual or potential releases of hazardous substances, which may pose an imminent and substantial endangerment to public health, or welfare, or the environment. EPA is concerned about the ongoing exposure to lead contaminated soil and indoor dust that residents of the WCHC are experiencing. EPA has collected various types of samples for understanding exposures and potential risks at the Site. Surface soil samples and indoor dust samples have been collected and analyzed. Soil samples collected from the top 6 inches have shown elevated levels of lead including 13 properties with lead levels above 5,000 mg/kg. As part of the ongoing removal assessment work in Zone 1, EPA recently vacuum sampled indoor dust for lead in approximately 42 units of the WCHC. Concentrations ranged from 43 to 1,600 mg/kg for lead fines and 1.8 to 31 mg/kg for arsenic fines. Results of indoor dust from the first 42 homes indicate 26 properties exceed the EPA risk based screening level of 316 mg/kg for lead in indoor living spaces. Wipe samples collected by ISDH found 6 out of 14 units with lead concentrations above the applicable lead dust clearance standard (40 µg/ft²-floors, 250 µg/ft²-window sills, and 400 µg/ft²-window trough). Observations by ATSDR demonstrate a consistent pattern of EBL levels in young children living in the WCHC. The census tract that includes all of the children from the WCHC (Zone 1) and part of Zone 2 had an EBL incidence rate of 19%. By comparison, the EBL rates for the 2 adjacent census tracts were 9% and 11%. Coordinating with local, state and federal partners, EPA is committed to reducing risks related to contaminants located within the Site and is providing residents with information to reduce their exposure to lead.

EPA, ATSDR and local public officials are working together to provide community outreach materials. ECHD is providing area residents blood level screenings. ISDH conducted testing for other possible sources of lead in their homes and found no evidence of lead paint in the units tested.

Given the significant number of indoor samples that indicated action is needed, the threat posed by high concentrations of lead in soil in adjacent outdoor areas, and the consistent pattern of EBL levels in children less than 6 years of age living in WCHC, EPA will clean the inside of all occupied (approximately 334) units within the WCHC. All units within the WCHC are or have the potential to be contaminated with lead contaminated dust above the risk-based screening criteria for indoor dust (See Attachment VII) from industrial activities. In general, the indoor cleanup process will involve four basic steps: (1) collection of indoor dust vacuum samples (in homes previously not sampled), (2) temporary relocation of residents, (3) removal of indoor dust, and (4) return residents to unit until permanently relocated by HUD. A combination of HEPA vacuums and wet cleaning will be used to remove lead dust from ceilings, floors, carpets, walls, drapes, accessible ductwork, furnace, and furniture.

If exposure to lead contaminated soil and indoor dust cannot be adequately addressed through mulching and indoor cleaning of units in the WCHC, EPA will temporarily relocate residents

with an understanding that there may be a greater necessity to address sensitive populations in the WCHC first until residents can be permanently relocated through the HUD relocation process. For this removal action, EPA has identified lead-sensitive populations in order of priority to include: (1) pregnant women, (2) families with children 2 years of age and younger, (3) families with children under the age of 6 with BLL greater than 5 µg/dL, and (4) families with children under the age of 6. EPA will evaluate each request to temporarily relocate any residents on a case by case basis. The final determination by EPA to temporarily relocate residents will be based on potential threats of exposure and EPA's ability to address lead exposures in the residences.

The Action Memorandum and supporting documentation follow the April 2002 Superfund Response Actions: Temporary Relocations Implementation Guidance, particularly in considering residents' needs, property security, dealing with resident's stress and disruptions, and explaining benefits. Consistent with EPA's guidance on temporary relocations (2002), Sec. IV.A ("Making the Relocation Decision"), temporary relocation at the Site is justified during the cleaning process and if there is a potential threat of exposure by the following factors:

- Health threats: completed pathways for uncontrolled exposure to contaminant-conditions at the Site may require identified sensitive populations to immediately disassociate from actual/or potential exposure to lead at the Site;
- Efficiency of response action: temporary relocation minimizes concerns about noise, property access, and other restrictions on the hours or types of response activities that may be conducted at the Site.

Removal activities associated with the indoor cleanup process and temporary relocation will:

- Develop a Work Plan and Site Specific Health and Safety Plan;
- Develop and implement an air monitoring/sampling plan for the work zone and Site;
- Continue indoor dust and other sampling as determined necessary;
- Mobilize equipment and personnel for the removal;
- Provide for Site security, as directed by the OSC;
- Assemble a temporary relocation team, the team will include at a minimum an On-Scene Coordinator (OSC), Remedial Project Manager (RPM), Community Involvement Coordinator (CIC), and representatives from the Office of Regional Counsel (ORC);
- Coordinate planning and support for all residents who will be temporarily relocated;
- Coordinate as necessary with Local and State officials, community leaders, local social service agencies, ATSDR, the media, and Headquarters Regional Coordinator;
- Notify residents orally of voluntary relocation, document eligibility status, and determine unique family needs;
- Explain relocation assistance to residents;
- Obtain signed agreements from each household accepting temporary relocation and agreement to comply with the expectations of the agreement;
- Effect the voluntary relocation of all involved residents;

- Keep communications open throughout the temporary relocation to answer resident's questions and facilitate problem solving;
- Coordinate documentation of the condition and contents of each property;
- Set-up for interior lead cleanup;
- Perform interior lead cleanup activities;
- Conduct clearance sampling as necessary to document efficacy of cleaning;
- Coordinate documentation and paperwork for the return of the property;
- For residents temporarily relocated as part of the cleaning process - return property and residents to cleaned properties;
- Demobilize equipment and personnel;
- Transport and dispose off-site any hazardous substances, pollutants and contaminants at a CERCLA-approved disposal facility in accordance with EPA's Off-Site Rule (40 CFR § 300.440) and
- Take any other response actions to address any release or threatened release of a hazardous substance, pollutant or contaminant that the EPA On-Scene Coordinator (OSC) determines may pose an imminent and substantial endangerment to the public health or the environment.

The removal actions will be conducted in a manner not inconsistent with the NCP.

The threats posed by uncontrolled substances considered hazardous meet the NCP criteria listed at § 300.415(b), and the response actions proposed herein are consistent with any long-term remedial actions which may be required. EPA anticipates having to continue actions to control tracking of lead dust into the units (mulching) and cleaning the units until all residents of WCHC are permanently relocated through the HUD relocation process. The HUD relocation process could extend beyond a year for some residents which may require EPA to resample and if necessary re-clean some of the units, and if appropriate, temporarily relocate residents.

Off-Site Rule

All hazardous substances, pollutants, or contaminants removed off-site pursuant to this removal action for treatment, storage, and disposal shall be treated, stored, or disposed of at a facility in compliance, as determined by EPA, with the EPA Off-Site Rule, 40 C.F.R. § 300.440.

2. Contribution to remedial performance

The proposed action should not impede future remedial performance.

3. Engineering Evaluation/Cost Analysis (EE/CA)

Not Applicable

4. Applicable or relevant and appropriate requirements (ARARs)

All applicable or relevant and appropriate requirements (ARARs) will be complied with to the extent practicable. On August 18, 2016, EPA sent an e-mail to Mr. Rex Osborn of IDEM asking for any State of Indiana ARARs that may apply. IDEM provided both Action and Chemical specific state ARARs in a letter dated August 26, 2016. EPA will consider and implement the submitted ARARs as appropriate.

Project Schedule

The time-critical removal actions will require approximately 180 working days to complete.

B. Removal Project Ceiling Estimate – Extramural Costs:

The detailed cleanup contractor cost is presented in Attachment III and the Independent Government Cost Estimate is presented in Attachment IV. Estimated project costs are summarized below:

REMOVAL ACTION PROJECT CEILING ESTIMATE				
<u>Extramural Costs</u> <u>Regional Removal</u> <u>Allowance Costs:</u>	<u>Current</u> <u>Ceiling</u>	<u>Proposed</u> <u>Increase</u>	<u>Cost</u> <u>Allocation</u> <u>for Increase</u>	<u>Proposed</u> <u>Ceiling</u>
Total Cleanup Contractor Costs (This cost category includes estimates for ERRS, subcontractors, Notices to Proceed, and Interagency Agreements with Other Federal Agencies and 20% Contingency)	\$1,484,800	\$17,390,902	\$12,772,830 (Removal) \$4,618,072 (Remedial)	\$18,875,702
<u>Other Extramural</u> <u>Costs Not Funded</u> <u>from the Regional</u> <u>Allowance:</u>				
Total START, including multiplier costs	\$ 122,250	\$3,000,000	\$2,203,364 (Removal) \$796,636 (Remedial)	\$3,122,250
Total Decontamination, Analytical & Tech. Services (DATS)	\$ 0	\$ 0		\$ 0
Total CLP	\$ 0	\$ 0		\$ 0
<u>Subtotal</u>	<u>\$ 122,250</u>	<u>\$3,000,000</u>		<u>\$3,122,250</u>
Subtotal Extramural Costs	\$1,607,050	\$20,390,902		\$21,997,952
Extramural Costs Contingency (20% of Subtotal, Extramural Costs rounded to nearest thousand for Proposed Increase)	<u>\$ 321,410</u>	<u>\$4,078,180</u>	\$2,995,239 (Removal) \$1,082,942 (Remedial)	<u>\$4,399,590</u>
TOTAL REMOVAL ACTION PROJECT CEILING	\$1,928,460	\$24,469,082	\$17,971,432 (Removal) \$6,497,650 (Remedial)	\$26,397,542

The response actions described in this memorandum directly address the actual or threatened release of hazardous substances, pollutants, or contaminants at the Site which may pose an imminent and substantial endangerment to public health or welfare or to the environment. These response actions do not impose a burden on affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the Site conditions, the nature of the hazardous substances and pollutants or contaminants documented on site, and the potential exposure pathways to nearby populations described in Section II, III, IV, and V above, actual or threatened releases of hazardous substances and pollutants or contaminants from this Site, if not addressed by implementing or delaying the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

VIII. OUTSTANDING POLICY ISSUES

This removal action involves nationally-significant or precedent-setting issues. Limited data is being used to extrapolate response actions over the entire site including decisions to clean indoor dust, temporarily relocate residents, and returning residents to their units once cleaning is complete. While warranted based on site-specific circumstances, this removal action may establish a precedent for future response actions and may commit EPA to a course of action that could have a significant impact on future responses or resources.

IX. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this Site is contained in the Confidential Enforcement Addendum.

The total EPA costs of this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be \$50,326,124¹.

$$(\$26,397,542 + \$2,000,000) + (77.22\% \times \$28,397,542) = \$50,326,124$$

¹ Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States right to cost recovery.

X. RECOMMENDATION

This decision document, along with the Action Memorandum signed on January 22, 2008, and the Action Memorandum Amendments signed on August 13, 2008 and September 12, 2011, represents the selected removal action for the U.S.S. Lead Site OU1, East Chicago, Lake County, Indiana. It was developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the Site (Attachment II).

Conditions at OU1 meet the NCP Section 300.415(b) criteria for a removal action and the CERCLA Section 104(c) emergency exemption from the \$2 million and 12-month limitation. The total removal action project ceiling, if approved, will be \$26,397,542, of which as much as \$17,574,278 may be used from the removal allowance and \$6,497,650 from remedial funding. I recommend your approval of the proposed removal action. You may indicate your decision by signing below.

APPROVE Mathy Stanislaus DATE: OCT 13 2016
Mathy Stanislaus, Assistant Administrator
Office of Land and Emergency Management

DISAPPROVE _____ DATE: _____
Mathy Stanislaus, Assistant Administrator
Office of Land and Emergency Management

Enforcement Addendum

Figures:

- 1 – Zone 1 Map
- 2 – OU1 Map

Attachments:

- I. Environmental Justice Analysis
- II. Administrative Record Index
- III. Detailed Cleanup Contractor Estimate
- IV. Independent Government Cost Estimate
- V. Summary of OU1 RD Soil Sampling Results
- VI. Summary of Indoor Dust Sampling Results
- VII. Indoor Dust Screening Criteria
- VIII. Indiana State Department of Health Wipe Sample Results
- IX. Original Action Memorandum dated January 22, 2008

- X. Amended Action Memorandum dated August 13, 2008
- XI. Second Amended Action Memorandum dated September 12, 2011

cc: Brian Schlieger, U.S. EPA, 5104A/B517F (Schlieger.Brian@epa.gov)
Lindy Nelson, U.S. DOI, w/o Enf. Addendum (Lindy_Nelson@ios.doi.gov)
Rex Osborn, IDEM w/o Enf. Addendum (rosborn@idem.in.gov)

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**NOT RELEVANT TO SELECTION
OF REMOVAL ACTION**

ENFORCEMENT ADDENDUM

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ENFORCEMENT CONFIDENTIAL

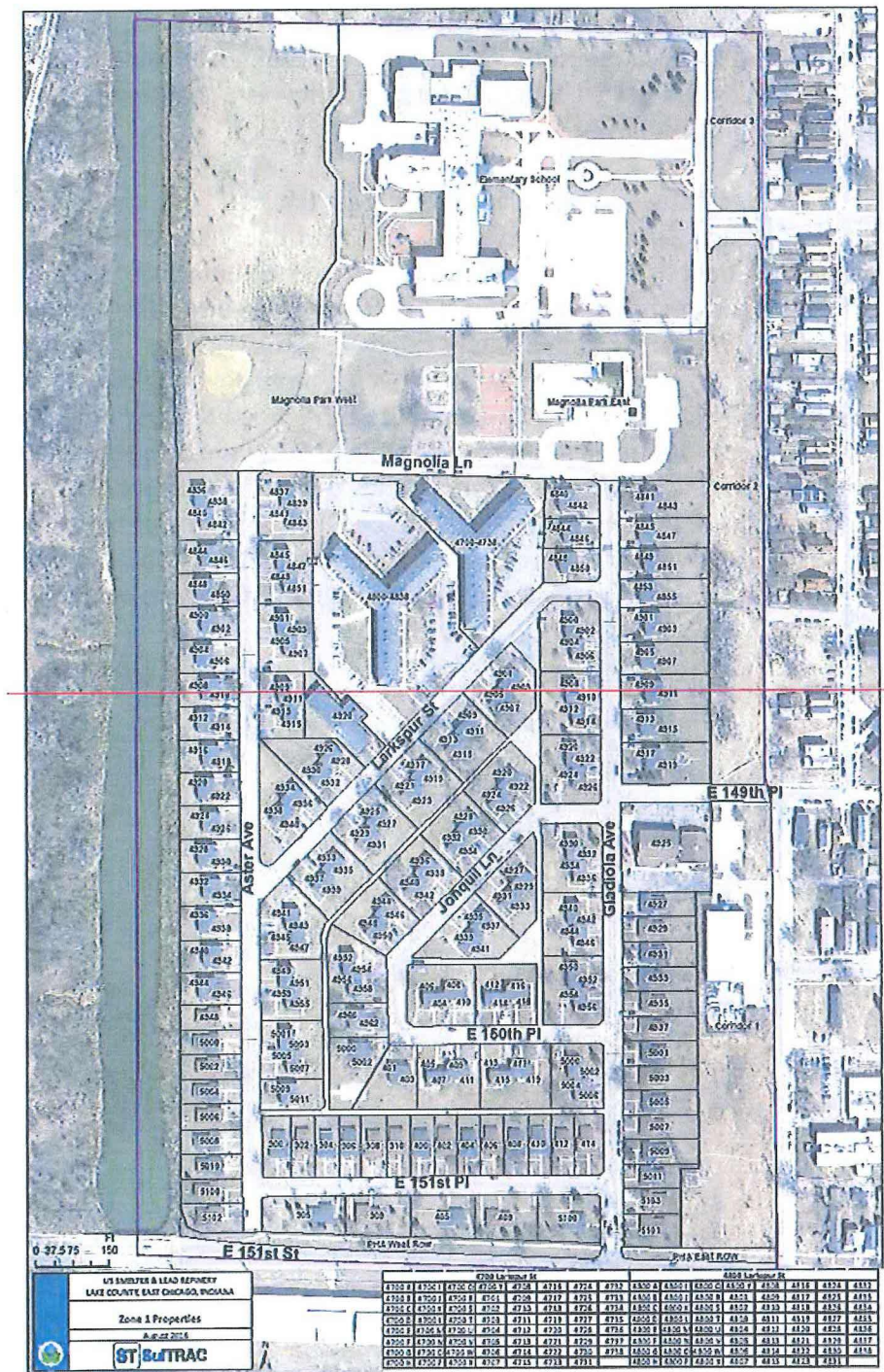
NOT SUBJECT TO DISCOVERY

FOIA EXEMPT

NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

FIGURE 1
Zone 1 MAP
U.S. Smelter and Lead Refinery Site, East Chicago, Lake County, Indiana



ATTACHMENT I

**U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION**

**ENVIRONMENTAL JUSTICE ANALYSIS
FOR
U.S. SMELTER AND LEAD REFINERY SITE, EAST CHICAGO, LAKE COUNTY,
INDIANA**

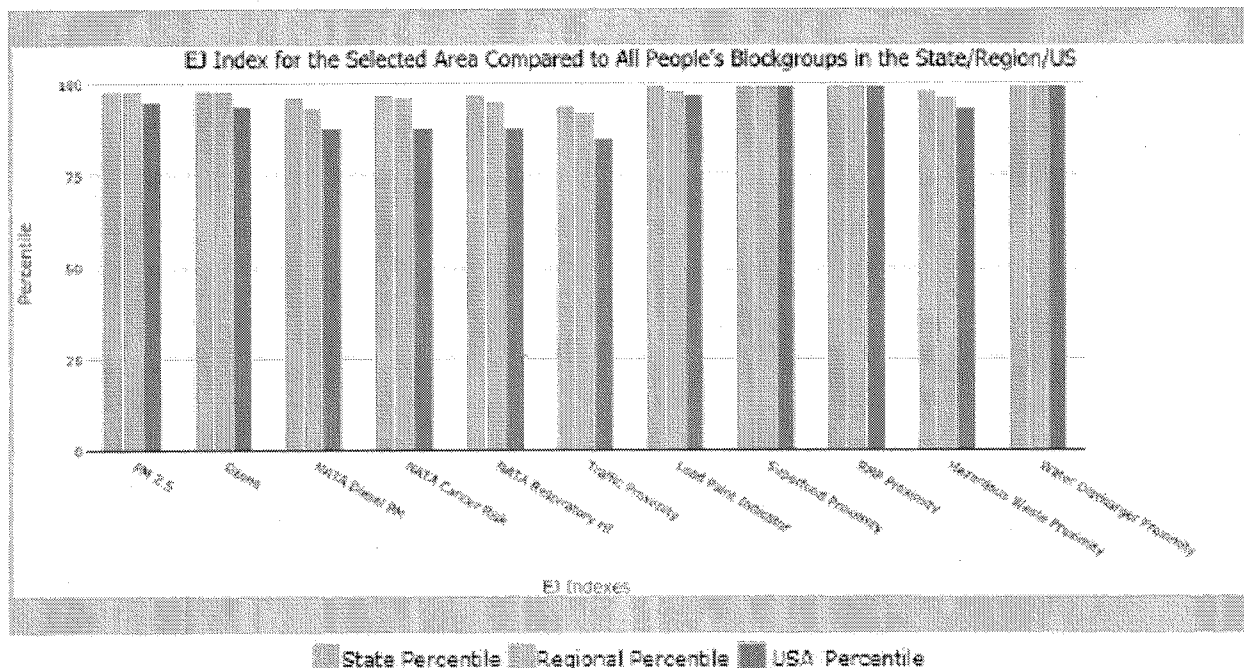


0.5 mile Ring Centered at 41.623974,-87.469228, INDIANA, EPA Region 5

Approximate Population: 2,455

Input Area (sq. miles): 0.79

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
EJ Indexes			
EJ Index for PM2.5	98	98	95
EJ Index for Ozone	98	98	94
EJ Index for NATA* Diesel PM	98	93	88
EJ Index for NATA* Air Toxics Cancer Risk	97	96	88
EJ Index for NATA* Respiratory Hazard Index	97	95	88
EJ Index for Traffic Proximity and Volume	94	92	85
EJ Index for Lead Paint Indicator	99	98	97
EJ Index for Superfund Proximity	99	99	99
EJ Index for RMP Proximity	99	99	99
EJ Index for Hazardous Waste Proximity	98	96	93
EJ Index for Water Discharger Proximity	99	99	99



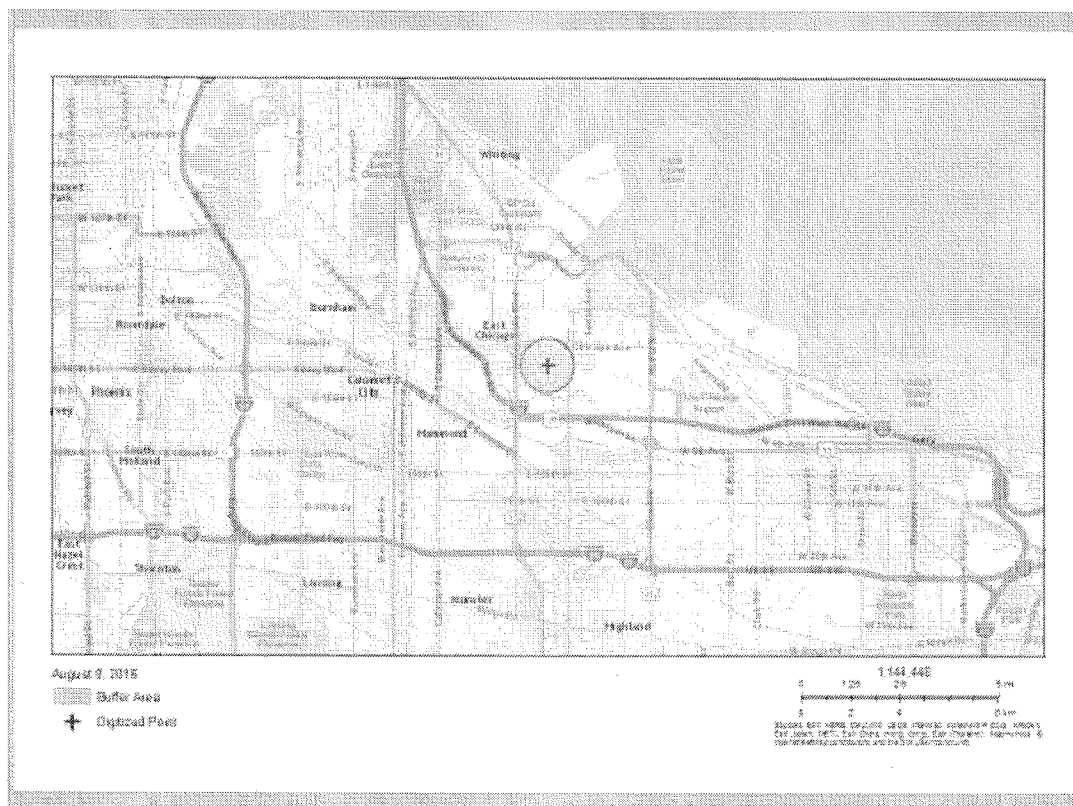
This report shows the values for environmental and demographic indicators and EISCREEN indexes. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EISCREEN documentation for discussion of these issues before using reports.



0.5 mile Ring Centered at 41.623974, -87.469228, INDIANA, EPA Region 5

Approximate Population: 2,455

Input Area (sq. miles): 0.79



Sites reporting to EPA	
Superfund NPL	0
Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)	0
National Pollutant Discharge Elimination System (NPDES)	0



Selected Variables	Value	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
Environmental Indicators							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$)	11.7	11	98	10.6	86	9.32	93
Ozone (ppb)	48.8	51.2	11	50.3	21	47.4	62
NATA* Diesel PM ($\mu\text{g}/\text{m}^3$)	0.86	0.835	57	0.931	50-60th	0.937	50-60th
NATA* Cancer Risk (lifetime risk per million)	32	34	38	34	<50th	40	<50th
NATA* Respiratory Hazard Index	1.5	1.4	61	1.7	<50th	1.8	<50th
Traffic Proximity and Volume (daily traffic count/distance to road)	240	260	73	370	70	590	65
Lead Paint Indicator (% Pre-1960 Housing)	0.65	0.36	82	0.39	77	0.3	84
Superfund Proximity (site count/km distance)	1.5	0.16	99	0.12	99	0.13	99
RMP Proximity (facility count/km distance)	4.3	0.52	99	0.51	99	0.43	99
Hazardous Waste Proximity (facility count/km distance)	0.09	0.044	91	0.059	78	0.072	77
Water Discharger Proximity (facility count/km distance)	2.9	0.34	99	0.31	99	0.31	99
Demographic Indicators							
Demographic Index	84%	27%	99	29%	97	38%	96
Minority Population	92%	19%	98	24%	94	37%	91
Low Income Population	77%	35%	95	33%	95	35%	95
Linguistically Isolated Population	5%	2%	87	2%	83	5%	70
Population With Less Than High School Education	22%	12%	84	11%	87	14%	78
Population Under 5 years of age	10%	8%	81	6%	83	8%	81
Population over 64 years of age	8%	14%	23	14%	23	14%	27

* The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <https://www.epa.gov/national-air-toxics-assessment>.

For additional information, see: www.epa.gov/environmentaljustice

EJSCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EJ concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EJSCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EJSCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EJ concerns.

ATTACHMENT II

**ADMINISTRATIVE RECORD INDEX
U.S. Smelter and Lead Refinery Site
East Chicago, Indiana**

August 2016

**U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION**

**ADMINISTRATIVE RECORD
FOR THE
U.S. SMELTER AND LEAD SITE
EAST CHICAGO, LAKE COUNTY, INDIANA**

**UPDATE 4
AUGUST 2016**

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	928967	4/1/02	U.S. EPA OSWER	File	Superfund Response Actions: Temporary Relocations Implementation Guidance - OSWER Directive 9230.0-97	96
2	424362	8/1/03	U.S. EPA	File	Superfund Lead Contaminated Residential Sites Handbook	124
3	424349	3/1/04	Geochemical Solutions	USS Lead	Final USS Lead Modified RCRA Facility Investigation (MRFI) Report (Draft: Text Only)	46
4	308202	3/1/04	Geochemical Solutions	USS Lead	Final USS Lead Modified RCRA Facility Investigation (MRFI) Report (Draft)	878
5	315595	11/18/08	Micke, F., U.S. EPA	Distribution List	Pollution Report (POLREP) #3 - Final	3
6	424390	8/31/09	Weston Solutions	U.S. EPA	Federal OSC Report, Revision 1, CERCLA Removal Action	44
7	413853	11/1/11	Micke, F., U.S. EPA	Distribution List	Pollution Report (POLREP) #1 - Initial - USS Lead-2	5
8	418177	11/16/11	Micke, F., U.S. EPA	Distribution List	Pollution Report (POLREP) #2 - USS Lead-2	6
9	418526	12/15/11	Micke, F., U.S. EPA	Distribution List	Pollution Report (POLREP) #3 - USS Lead-2	6

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
10	424434-424435	6/1/12	SulTRAC	U.S. EPA	Remedial Investigation Report (Final) for the U.S. Smelter and Lead Refinery Superfund Site w/ Appendices A-D (<i>Portions of this document have been redacted</i>)	9086
11	928966	7/1/12	U.S. Department of Housing and Urban Development	File	Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing	874
12	928964	7/1/16	SulTRAC	U.S. EPA	Data Evaluation Report for Sampling Conducted During 2014-2015 - USS Lead Residential Area (Text, Figures, and Tables)	101
13	928955	8/8/16	Johnston, M., U.S. EPA	Ribordy, M., U.S. EPA	Email re: Blood Lead Level Summary for Action Memo	2
14	928958	8/10/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report - USS Lead Indoor Dust Samples from July 29 - August 4, 2016	35
15	928957	8/11/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report - USS Lead Indoor Dust Samples from August 5, 2016	11
16	928959	8/12/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report - USS Lead Indoor Dust Samples from August 8, 2016	10
17	928960	8/16/16	Vickers, J., Tetra Tech	Behnke, K., U.S. EPA	Data Validation Report - USS Lead Indoor Dust Samples from August 9, 2016	9
18	928969	8/16/16	King, J., Indiana State Department of Health	File	Lead Risk Assessment Reports for 14 Properties (<i>Portions of this document have been redacted</i>)	382
19	928968	8/18/16	Johnston, M., U.S. EPA	Ribordy, M., U.S. EPA	Email re: USS Lead - Updated Summary Table (<i>Portions of this document have been redacted</i>)	4
20	928961	8/24/16	Osborn, R., IDEM	Ribordy, M., U.S. EPA	Email re: Lack of State Resources to Conduct Removal	2
21	928962	8/26/16	Petroff, D., IDEM	Ribordy, M., U.S. EPA	Letter re: Applicable or Relevant and Appropriate Requirements (ARARs)	3

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
22	929439	9/14/16	Caudill, M., ATSDR	Ribordy, M., U.S. EPA	Email re: Blood Lead Level Statements for Your Records	1
23	-	-	Ribordy, M., U.S. EPA	Ballotti, D., U.S. EPA	Action Memorandum re: Request for Approval and Funding of a Time-Critical Removal Action at the U.S. Smelter and Lead Refinery Site (<i>PENDING</i>)	-

ATTACHMENT III

DETAILED CLEANUP CONTRACTOR ESTIMATE

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NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

ATTACHMENT IV

INDEPENDENT GOVERNMENT COST ESTIMATE

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NOT RELEVANT TO SELECTION

OF REMOVAL ACTION

ATTACHMENT 5

MAP: SULTRAC PROPERTIES WITH LEAD IN SOIL

**USS LEAD SITE
EAST CHICAGO, INDIANA**

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ATTACHMENT V

Summary of OU1 RD Soil Sampling Results U.S. Smelter and Lead Refinery Site, East Chicago, Lake County, Indiana

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	566	55	645	58	
6-12 inches	3320	76	809	53	
12-18 inches	12900	262	1534	ND	
18-24 inches	16800	251	925	ND	
24-30 inches	5761	ND	882	56	

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	982	ND	462	ND	
6-12 inches	3230	59	1518	ND	
12-18 inches	1653	ND	9230	477	
18-24 inches	4480	143	7130	235	
24-30 inches	2338	ND	Native Sand (NS)	Native Sand (NS)	

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	1573	143	499	ND	
6-12 inches	8160	518	1172	ND	
12-18 inches	5610	248	1928	84	
18-24 inches	15100	1060	1407	ND	
24-30 inches	11111	715	2157	ND	

Depth	Front		Back		
-------	-------	--	------	--	--

	Lead	Arsenic	Lead	Arsenic
0-6				
inches	11700	818	1160	45
6-12				
inches	12100	1260	5050	170
12-18				
inches	20200	1810	7930	313
18-24				
inches	14100	1950	7120	348
24-30				
inches	5885	1118	3422	89

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	1370	84	1392	70
6-12				
inches	2460	115	1509	ND
12-18				
inches	6420	290	5330	67
18-24				
inches	8240	611	2850	55
24-30				
inches	1922	19	1699	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	996	74	333	12
6-12				
inches	6520	756	1034	ND
12-18				
inches	3810	353	7880	102
18-24				
inches	2140	325	5930	147
24-30				
inches	558	24	5085	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	2220	242	2160	137
6-12				
inches	3960	221	7810	880
12-18				
inches	7100	587	26200	1130

18-24 inches	17700	1140	30400	2610
24-30 inches	3634	404	Refusal (NS)	Refusal (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	799	80	172	ND
6-12 inches	5710	118	200	ND
12-18 inches	6440	492	932	ND
18-24 inches	1830	131	1962	ND
24-30 inches	1971	192	1662	206

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	467	40	3110	171
6-12 inches	18200	250	5420	124
12-18 inches	16900	964	8520	410
18-24 inches	14100	859	6960	297
24-30 inches	1906	325	1082	197

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	2420	26	1740	62
6-12 inches	4490	55	54900	2180
12-18 inches	4108	87	10300	567
18-24 inches	Native	Native		
24-30 inches	Sand/Refusal (NS)	Sand/Refusal (NS)	5700	277
24-30 inches	Native	Native		
24-30 inches	Sand/Refusal (NS)	Sand/Refusal (NS)	7395	505

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic

0-6				
inches	447	ND	1724	153
6-12				
inches	1545	210	6750	251
12-18				
inches	13900	1080	6820	383
18-24				
inches	1244	ND	12100	386
24-30				
inches	967	ND	12169	1056

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	975	16	585	46
6-12				
inches	831	47	6000	26
12-18				
inches	1443	76	1127	70
18-24			Native Sand/Refusal	Native Sand/Refusal
inches	1899	76	(NS)	(NS)
24-30	Native	Native	Native Sand/Refusal	Native Sand/Refusal
inches	Sand/Refusal (NS)	Sand/Refusal (NS)	(NS)	(NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	1180	98	569	64
6-12				
inches	2740	95	670	129
12-18				
inches	1104	ND	5630	56
18-24				
inches	1689	ND	3890	409
24-30				
inches	1386	99	808	55

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	414	35	740	68
6-12				
inches	2710	25	2890	52
12-18				
inches	5900	111	5630	136
18-24				
inches	12100	147	17300	102

24-30 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	Refusal/Native Sand (NS)	Refusal/Native Sand (NS)
Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	548	55	634	56
6-12 inches	1573	90	1951	171
12-18 inches	1693	ND	16700	171
18-24 inches	454	38	3070	126
24-30 inches	1573	ND	7045	404

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	969	51	488	58
6-12 inches	1923	ND	615	ND
12-18 inches	2620	78	1893	ND
18-24 inches	3400	59	1568	ND
24-30 inches	1339	88	1241	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	519	ND	451	ND
6-12 inches	1350	36	1124	97
12-18 inches	1045	ND	1731	ND
18-24 inches	1265	ND	862	ND
24-30 inches	1634	108	600	36

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	576	ND	590	ND

6-12				
inches	819	73	763	68
12-18				
inches	2340	174	2900	66
18-24				
inches	1160	111	3160	94
24-30				
inches	798	144	1967	111

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	580	32	254	ND
6-12				
inches	899	ND	761	61
12-18				
inches	1330	92	566	ND
18-24				
inches	1090	76	597	ND
24-30				
inches	204	15	1036	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	365	12	235	29
6-12				
inches	578	ND	2600	50
12-18				
inches	1005	66	1305	87
18-24				
inches	615	ND	271	ND
24-30				
inches	478	ND	Refusal (NS)	Refusal (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	808	52	1082	75
6-12				
inches	5620	121	1332	58
12-18				
inches	1197	ND	1202	91
18-24				
inches	Native	Native		
	Sand/Refusal (NS)	Sand/Refusal (NS)	1099	75
24-30				
inches	Native	Native	Refusal/Native Sand	Refusal/Native Sand
	Sand/Refusal (NS)	Sand/Refusal (NS)	(NS)	(NS)

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	297	ND	267	ND	
6-12 inches	954	ND	1135	ND	
12-18 inches	5720	52	1244	115	
18-24 inches	931	121	800	46	
24-30 inches	255	ND	470	ND	

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	266	ND	506	17	
6-12 inches	1062	ND	1352	91	
12-18 inches	1038	ND	5270	70	
18-24 inches	Native Sand (NS)	Native Sand (NS)	3750	133	
24-30 inches	Native Sand (NS)	Native Sand (NS)	1774	194	

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	864	ND	145	29	
6-12 inches	902	72	540	36	
12-18 inches	1755	ND	875	ND	
18-24 inches	765	ND	395	13	
24-30 inches	407	ND	205	ND	

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	1531	ND	285	25	
6-12 inches	439	ND	1153	74	

12-18				
inches	965	ND	938	ND
18-24				
inches	1399	ND	858	ND
24-30				
inches	2081	ND	1284	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	684	ND	403	55
6-12				
inches	1219	ND	5950	46
12-18				
inches	7720	32	1875	ND
18-24				
inches	8620	39	1219	ND
24-30			Native Sand/Refusal	Native Sand/Refusal
inches	982	ND	(NS)	(NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	90	ND	251	ND
6-12				
inches	146	ND	1740	36
12-18				
inches	1612	ND	6890	160
18-24				
inches	238	ND	7030	210
24-30				
inches	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	531	13	576	ND
6-12				
inches	998	76	1860	64
12-18				
inches	8470	37	1126	ND
18-24				
inches	1862	ND	4260	74
24-30	Native	Native	Native Sand/Refusal	Native Sand/Refusal
inches	Sand/Refusal (NS)	Sand/Refusal (NS)	(NS)	(NS)

Depth	Front		Back	
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	Lead	Arsenic	Lead	Arsenic
0-6 inches	154	27	209	ND
6-12 inches	228	ND	227	55
12-18 inches	498	ND	219	38
18-24 inches	1670	29	Native Sand (NS)	Native Sand (NS)
24-30 inches	770	ND	Native Sand (NS)	Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	632	ND	507	15
6-12 inches	778	ND	1750	84
12-18 inches	461	ND	5820	76
18-24 inches	232	ND	1884	ND
24-30 inches	410	ND	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	554	ND	1770	45
6-12 inches	1407	ND	6420	274
12-18 inches	1436	ND	6570	169
18-24 inches	2580	44	26900	283
24-30 inches	2053	ND	Refusal (NS)	Refusal (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	756	9	816	78
6-12 inches	1439	ND	3520	60
12-18 inches	1211	ND	1910	38

18-24 inches	936	ND	350	ND
24-30 inches	814	ND	564	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	416	6	412	ND
6-12 inches	998	ND	1138	ND
12-18 inches	1958	93	1645	126
18-24 inches	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)
24-30 inches	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	870	11	618	38
6-12 inches	828	68	4190	31
12-18 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	1654	ND
18-24 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	1994	ND
24-30 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	983	9	495	48
6-12 inches	1509	ND	1024	86
12-18 inches	1469	90	845	ND
18-24 inches	Mostly native sand	Mostly native sand	548	ND
24-30 inches	Native Sand (NS)	Native Sand (NS)	609	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic

0-6				
inches	355	8	618	56
6-12				
inches	1380	15	1874	ND
12-18				
inches	1498	ND	2680	27
18-24				
inches	1782	ND	1750	ND
24-30				
inches	5484	276	1660	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	1015	ND	2766	93
6-12				
inches	7171	358	1619	61
12-18				
inches	7812	496	2989	63
18-24	Native	Native		
inches	Sand/Refusal (NS)	Sand/Refusal (NS)	4320	116
24-30	Native	Native		
inches	Sand/Refusal (NS)	Sand/Refusal (NS)	4701	98

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	239	37	141	27
6-12				
inches	1611	ND	190	ND
12-18				
inches	700	ND	Native Sand (NS)	Native Sand (NS)
18-24				
inches	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)
24-30				
inches	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	1457	ND	407	68
6-12				
inches	3850	21	3280	26
12-18				
inches	27900	31	3600	55
18-24				
inches	5710	24	3390	48

24-30 inches	1453	ND	972	132
Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	457	34	806	38
6-12 inches	1018	59	717	ND
12-18 inches	1440	10	62	ND
18-24 inches	55	ND	74	ND
24-30 inches	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	676	ND	213	37
6-12 inches	7650	123	1030	17
12-18 inches	3550	48	4200	10
18-24 inches	7730	62	Native Sand (NS)	Native Sand (NS)
24-30 inches	1282	ND	Native Sand (NS)	Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	1004	ND	1640	15
6-12 inches	2960	19	3660	29
12-18 inches	4920	22	3020	30
18-24 inches	8740	50	8580	44
24-30 inches	5188	372	476	100

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	45000	58	1650	10

6-12 inches	5876	110	5744	ND
12-18 inches	6750	ND	1430	44
18-24 inches	Native Sand (NS)	Native Sand (NS)	1372	ND
24-30 inches	Native Sand (NS)	Native Sand (NS)	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)



Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	2890	9	1079	44
6-12 inches	1510	59	5550	43
12-18 inches	3100	15	5250	41
18-24 inches	7770	24	6420	29
24-30 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	5970	11



Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	673	8	225	37
6-12 inches	5960	43	116	41
12-18 inches	6570	51	44	56
18-24 inches	478	ND	Native Sand (NS)	Native Sand (NS)
24-30 inches	541	ND	Native Sand (NS)	Native Sand (NS)



Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	784	64	254	8
6-12 inches	1401	ND	2910	24
12-18 inches	1563	ND	5010	46
18-24 inches	3320	20	935	ND
24-30 inches	3272	93	1096	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	1213	ND	651	52
6-12 inches	1395	ND	1477	77
12-18 inches	1229	ND	28600	111
18-24 inches	1038	ND	13100	108
24-30 inches	48	ND	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	652	59	521	61
6-12 inches	3190	27	1503	68
12-18 inches	5270	30	7450	50
18-24 inches	5060	39	1177	94
24-30 inches	560	ND	93	29

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	230	7	400	8
6-12 inches	1581	83	172	17
12-18 inches	1872	ND	Native Sand (NS)	Native Sand (NS)
18-24 inches	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)
24-30 inches	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	505	65	2660	92
6-12 inches	1336	ND	2640	79

12-18 inches	4450	72	9720	112
18-24 inches	7080	72	6060	77
24-30 inches	2335	ND	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	7610	86	298	12
6-12 inches	7560	14	464	65
12-18 inches	15000	30	510	46
18-24 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	177	20
24-30 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	380	9	1450	66
6-12 inches	2341	ND	1344	49
12-18 inches	1449	46	440	14
18-24 inches	6924	176	Native Sand (NS)	Native Sand (NS)
24-30 inches	2864	94	Native Sand (NS)	Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	573	ND	9550	81
6-12 inches	771	ND	4210	110
12-18 inches	822	ND	20200	252
18-24 inches	6190	32	Native Sand (NS)	Native Sand (NS)
24-30 inches	2790	ND	Native Sand (NS)	Native Sand (NS)

Depth	Front	Back
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	Lead	Arsenic	Lead	Arsenic
0-6				
inches	3500	16	217	ND
6-12				
inches	665	34	858	40
12-18				
inches	545	41	1445	78
18-24				
inches	423	49	1690	38
24-30				
inches	290	22	2863	187

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	410	8	455	ND
6-12				
inches	549	36	753	46
12-18				
inches	9570	32	524	32
18-24				
inches	841	9	Native Sand (NS)	Native Sand (NS)
24-30				
inches	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	1100	21	152	19
6-12				
inches	1266	44	1133	78
12-18				
inches	1165	40	600	40
18-24				
inches	Native Sand (NS)	Native Sand (NS)	2810	39
24-30				
inches	Native Sand (NS)	Native Sand (NS)	145	18

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	2590	24	703	66
6-12				
inches	2034	ND	1338	ND
12-18				
inches	925	ND	3190	10

18-24				
inches	601	ND	1611	ND
24-30				
inches	668	ND	620	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	310	8	1008	44
6-12				
inches	1810	19	2020	15
12-18				
inches	3810	34	1666	49
18-24	Refusal/Native	Refusal/Native		
inches	Sand (NS)	Sand (NS)	1370	46
24-30	Refusal/Native	Refusal/Native		
inches	Sand (NS)	Sand (NS)	2195	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	1710	98	1700	9
6-12				
inches	4700	25	1053	50
12-18				
inches	4380	19	Native Sand (NS)	Native Sand (NS)
18-24				
inches	6170	51	Native Sand (NS)	Native Sand (NS)
24-30	Refusal/Native	Refusal/Native		
inches	Sand (NS)	Sand (NS)	Native Sand (NS)	Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	442	51	233	ND
6-12				
inches	626	ND	138	ND
12-18				
inches	576	105	155	ND
18-24				
inches	423	ND	259	ND
24-30			Mostly native	Mostly native
inches	428	ND	sand/Refusal	sand/Refusal

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic

0-6				
inches	710	17	1096	56
6-12				
inches	863	ND	7360	24
12-18				
inches	1623	66	1769	68
18-24			Refusal/Native Sand	Refusal/Native Sand
inches	5950	27	(NS)	(NS)
24-30	Native	Native	Refusal/Native Sand	Refusal/Native Sand
inches	Sand/Refusal (NS)	Sand/Refusal (NS)	(NS)	(NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	480	ND	219	ND
6-12				
inches	588	ND	295	ND
12-18				
inches	410	ND	484	11
18-24				
inches	435	ND	111	ND
24-30				
inches	219	ND	105	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	767	ND	534	56
6-12				
inches	2580	34	6780	129
12-18				
inches	12400	121	13200	207
18-24				
inches	8520	70	10600	332
24-30			Native Sand/Refusal	Native Sand/Refusal
inches	Refusal (NS)	Refusal (NS)	(NS)	(NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	780	15	254	ND
6-12				
inches	693	44	3930	10
12-18				
inches	442	11	513	ND
18-24				
inches	169	ND	2640	14

24-30 inches	174	ND	1829	ND
Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	1073	58	607	40
6-12 inches	1948	73	1572	76
12-18 inches	6050	68	1382	63
18-24 inches	7850	88	998	ND
24-30 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	123	18	249	31
6-12 inches	419	7	1100	20
12-18 inches	1230	50	1001	ND
18-24 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	941	67
24-30 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	597	67	235	ND
6-12 inches	1441	ND	666	ND
12-18 inches	506	ND	474	ND
18-24 inches	285	ND	597	6
24-30 inches	99	ND	317	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	663	36	1074	47

6-12 inches	849	53	1481	68
12-18 inches	81200	31	864	60
18-24 inches	3000	25	1943	63
24-30 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	Refusal/Native Sand (NS)	Refusal/Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	483	7	2620	47
6-12 inches	1212	ND	5360	119
12-18 inches	9740	134	16500	386
18-24 inches	12900	296	18300	318
24-30 inches	9106	ND	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	1219	ND	761	26
6-12 inches	1821	ND	3940	70
12-18 inches	3780	14	11100	47
18-24 inches	9990	24	Native Sand (NS)	Native Sand (NS)
24-30 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	Native Sand (NS)	Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	465	13	194	ND
6-12 inches	1002	ND	693	15
12-18 inches	329	12	620	ND
18-24 inches	274	ND	481	ND
24-30 inches	558	ND	411	ND

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	1685	ND	833	29	
6-12 inches	3340	32	9970	336	
12-18 inches	6540	112	9030	120	
18-24 inches	13900	191	89	ND	
24-30 inches	4995	ND	211	ND	

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	426	38	866	46	
6-12 inches	1133	52	1704	51	
12-18 inches	1445	73	1617	ND	
18-24 inches	1069	ND	5940	31	
24-30 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	Refusal/Native Sand (NS)	Refusal/Native Sand (NS)	

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	6760	130	426	ND	
6-12 inches	7320	107	4740	72	
12-18 inches	6600	133	7680	160	
18-24 inches	10200	217	1649	ND	
24-30 inches	4243	ND	6974	404	

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	1051	ND	5970	126	
6-12 inches	11200	173	3700	89	

12-18				
inches	23100	269	12500	491
18-24				
inches	21700	257	2070	130
24-30				
inches	12013	432	193	42

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	9630	28	423	32
6-12				
inches	82900	94	1355	63
12-18				
inches	1957	94	1264	77
18-24			Native Sand/Refusal	Native Sand/Refusal
inches	241	ND	(NS)	(NS)
24-30			Native Sand/Refusal	Native Sand/Refusal
inches	Native Sand (NS)	Native Sand (NS)	(NS)	(NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	857	ND	2540	55
6-12				
inches	1253	ND	17800	281
12-18				
inches	5040	100	22000	463
18-24				
inches	1909	ND	Refusal (NS)	Refusal (NS)
24-30				
inches	1592	ND	Refusal (NS)	Refusal (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	1010	67	293	ND
6-12				
inches	8210	151	470	ND
12-18				
inches	12100	322	7460	73
18-24				
inches	9490	164	1226	ND
24-30				
inches	3882	ND	Native Sand (NS)	Native Sand (NS)

Depth	Front		Back	
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	Lead	Arsenic	Lead	Arsenic
0-6 inches	9500	46	780	19
6-12 inches	2410	48	5390	66
12-18 inches	961	ND	3720	50
18-24 inches	900	51	8590	125
24-30 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	Refusal/Native Sand (NS)	Refusal/Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	789	46	1251	82
6-12 inches	682	40	2780	58
12-18 inches	17400	176	1100	54
18-24 inches	Native Sand (NS)	Native Sand (NS)	462	32
24-30 inches	Native Sand (NS)	Native Sand (NS)	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	582	58	5160	126
6-12 inches	3860	50	8360	191
12-18 inches	5610	106	8020	242
18-24 inches	1062	ND	7520	308
24-30 inches	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	5302	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	1400	28	1100	22
6-12 inches	2900	21	620	43
12-18 inches	1330	94	1004	63

18-24				
inches	937	99	515	ND
24-30			Native Sand/Refusal	Native Sand/Refusal
inches	529	33	(NS)	(NS)



Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	802	49	561	52
6-12				
inches	12800	79	1351	69
12-18				
inches	1275	52	8840	62
18-24	Native	Native		
inches	Sand/Refusal (NS)	Sand/Refusal (NS)	Native Sand (NS)	Native Sand (NS)
24-30	Native	Native		
inches	Sand/Refusal (NS)	Sand/Refusal (NS)	Native Sand (NS)	Native Sand (NS)



Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	494	ND	586	18
6-12				
inches	1820	55	860	ND
12-18				
inches	731	44	959	ND
18-24				
inches	269	ND	497	43
24-30				
inches	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)	Native Sand (NS)



Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	206	ND	230	28
6-12				
inches	860	12	520	ND
12-18				
inches	1420	9	441	ND
18-24				
inches	469	ND	1020	11
24-30				
inches	345	ND	288	ND



Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic

0-6				
inches	2110	45	1266	ND
6-12				
inches	1343	ND	7720	370
12-18				
inches	8570	82	6750	131
18-24				
inches	9590	227	17700	883
24-30				
inches	136	ND	8503	995

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	460	7	258	ND
6-12				
inches	1500	29	746	ND
12-18				
inches	595	23	545	ND
18-24				
inches	223	ND	213	24
24-30				
inches	294	ND	306	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	435	44	1150	80
6-12				
inches	1178	ND	4110	114
12-18				
inches	3860	125	4210	103
18-24				
inches	2960	58	11100	242
24-30			Mostly native	Mostly native
inches	4733	ND	sand/Refusal	sand/Refusal

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6				
inches	237	ND	536	ND
6-12				
inches	409	ND	582	ND
12-18				
inches	504	ND	840	ND
18-24				
inches	461	ND	921	ND

24-30 inches	454	ND	692	ND
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Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	10200	145	1743	57
6-12 inches	49500	352	1975	99
12-18 inches	56300	476	12700	165
18-24 inches	88900	674	9970	144
24-30 inches	39478	978	1831	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	229	ND	606	ND
6-12 inches	478	ND	709	ND
12-18 inches	841	ND	513	ND
18-24 inches	603	ND	534	ND
24-30 inches	868	ND	297	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	9470	133	1866	112
6-12 inches	13600	215	3210	61
12-18 inches	66000	383	12900	313
18-24 inches	50100	299	5370	138
24-30 inches	20867	720	7296	304

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	260	ND	538	ND

6-12 inches	1240	ND	1537	ND
12-18 inches	204	ND	5010	137
18-24 inches	111	32	1284	ND
24-30 inches	34	43	1432	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	238	ND	650	ND
6-12 inches	1431	ND	489	19
12-18 inches	199	ND	298	ND
18-24 inches	172	ND	131	21
24-30 inches	209	ND	319	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	6900	276	3980	32
6-12 inches	23400	667	1849	ND
12-18 inches	58300	2420	4190	137
18-24 inches	91100	3530	4100	104
24-30 inches	Refusal (NS)	Refusal (NS)	Native Sand (NS)	Native Sand (NS)

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	199	43	219	35
6-12 inches	491	ND	544	ND
12-18 inches	476	ND	766	ND
18-24 inches	259	ND	5540	114
24-30 inches	64	20	318	ND

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	343	12	239	ND	
6-12 inches	1668	105	651	54	
12-18 inches	2570	38	631	39	
18-24 inches	1641	322	1211	74	
24-30 inches	2337	222	1867	96	

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	853	53	429	44	
6-12 inches	6220	436	1327	109	
12-18 inches	5830	418	1319	85	
18-24 inches	6150	535	3111	97	
24-30 inches	Not Sampled in RI	Not Sampled in RI	Native Sand/Refusal (NS)	Native Sand/Refusal (NS)	

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	4510	329	670	ND	
6-12 inches	25300	1430	1265	ND	
12-18 inches	26600	1370	1770	78	
18-24 inches	20300	1110	10900	419	
24-30 inches	4484	808	4726	217	

Depth	Front		Back		
	Lead	Arsenic	Lead	Arsenic	
0-6 inches	2600	179	3420	40	
6-12 inches	448	10	1700	82	

12-18 inches	1560	97	715	ND
18-24 inches	1345	142	819	61
24-30 inches	359	ND	598	ND

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	5993	NS	1055	NS
6-12 inches	1742	NS	5977	NS
12-18 inches	1680	NS	5408	NS
18-24 inches	699	18	27100	239
24-30 inches	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	276	NS	2398	NS
6-12 inches	287	NS	1148	NS
12-18 inches	99	NS	245	16
18-24 inches	49	NS	144	NS
24-30 inches	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	559	NS	543	9
6-12 inches	1146	NS	3774	NS
12-18 inches	2122	NS	2840	NS
18-24 inches	1845	NS	1839	NS
24-30 inches	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI

Depth	Front	Back
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	Lead	Arsenic	Lead	Arsenic
0-6 inches	1848	NS	1423	NS
6-12 inches	1269	NS	1489	NS
12-18 inches	2120	NS	1600	9
18-24 inches	2258	NS	588	NS
24-30 inches	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	333	7	444	NS
6-12 inches	3160	56	15500	144
12-18 inches	2523	NS	12300	168
18-24 inches	1604	NS	NS	NS
24-30 inches	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	2071	NS	849	22
6-12 inches	2708	NS	1730	NS
12-18 inches	2175	NS	498	20
18-24 inches	1400	41	587	NS
24-30 inches	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI

Depth	Front		Back	
	Lead	Arsenic	Lead	Arsenic
0-6 inches	1498	NS	1094	NS
6-12 inches	13000	434	926	NS
12-18 inches	16700	567	382	NS

18-24 inches	NS	NS	143	NS
24-30 inches	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI	Not Sampled in RI

ATTACHMENT VI

Summary of Indoor Dust Sampling Results U.S. Smelter and Lead Refinery Site, East Chicago, Lake County, Indiana

Unit ID	Sample ID	Location	Units	Arsenic (coarse fraction)		Arsenic (fine fraction)		Lead (coarse fraction)		Lead (fine fraction)	
1	USSL-01-BR-080516	Bedroom	mg/Kg	0.25	J	20	U	7		54	
1	USSL-01-FE/RE-080516	Front and Rear Entrance	mg/Kg	0.96	J	2.9	J	44		210	
2	USSL-02-BR-080116	Bedroom	mg/Kg	1.2	J	3.4	J-	18		100	
2	USSL-02-FE-080116	Front Entrance	mg/Kg	21		14	J-	820		390	
2	USSL-02-PA-080116	Play Area	mg/Kg	4.2		13	J-	71		120	
3	USSL-03-FE/RE-080216	Front and Rear Entrance	mg/Kg	2.6	J	4.2	J	580		1600	
4	USSL-04-BR-080116	Bedroom	mg/Kg	0.99	J	2.5	J-	110		210	
4	USSL-04-FE-080116	Front Entrance	mg/Kg	2.5	J	5.6	J-	310		720	
5	USSL-05-BR-080416	Bedroom	mg/Kg	0.83	J	4.3	J-	92		280	
5	USSL-05-FE/RE-080416	Front and Rear Entrance	mg/Kg	2.3	J	5.4	J-	240		570	
6	USSL-06-FE/RE-080116	Front and Rear Entrance	mg/Kg	1.8	J	4.9	J-	210		620	
6	USSL-06-PA-080116	Play Area	mg/Kg	2.1	J	3.4	J-	150		400	
7	USSL-07-RE-080116	Rear Entrance	mg/Kg	6.2		17	J-	68		190	
8	USSL-08-BR-080316	Bedroom	mg/Kg	0.61	J	4.5	J	21		110	
8	USSL-08-FE/LR-080316	Front Entrance and Living Room	mg/Kg	2.4	J	7.6	J	70		570	
10	USSL-10-FE/LR-080416	Front Entrance and Living Room	mg/Kg	5.7		11	J-	230		320	
10	USSL-10-PA-080416	Play Area	mg/Kg	0.68	J	4.3	J-	33		330	
12	USSL-12-BR-080216	Bedroom	mg/Kg	0.63	J	250	U	24		140	J
12	USSL-12-FE/RE-080216	Front and Rear Entrance	mg/Kg	2.3		4.9	J	73		440	
13	USSL-13-FE-080216	Front Entrance	mg/Kg	2	J	7	J	59		260	
14	USSL-14-BR-080816	Bedroom	mg/Kg	1.2	U	2.8	U	19	J	43	J
14	USSL-14-FE/LR-080816	Front Entrance and Living Room	mg/Kg	1.4	J	2.7	J	210		520	

15	USSL-15-BR-080216	Bedroom	mg/Kg	0.53	J	38	U	24		90	
15	USSL-15-FE/RE-080216	Front and Rear Entrance	mg/Kg	3.2	J	8	J	170		490	
16	USSL-16-BR-080516	Bedroom	mg/Kg	1.9		3.2	J	39		120	
16	USSL-16-FE/LR-080516	Front Entrance and Living Room	mg/Kg	8.1		5.1		1200		410	
17	USSL-17-BR-080216	Bedroom	mg/Kg	0.34	J	4.3	J	13		360	
17	USSL-17-FE-080216	Front Entrance	mg/Kg	2.4	J	6.1	J	130		500	
17	USSL-17-LR-080216	Living Room	mg/Kg	3.6	J	5.5	J	170		420	
18	USSL-18-BR-080216	Bedroom	mg/Kg	0.7	J	4.9	J	27		140	
18	USSL-18-FE/LR-080216	Front Entrance and Living Room	mg/Kg	1.6	J	5.9	J	120		350	
19	USSL-19-BR-080316	Bedroom	mg/Kg	1.2	J	3	J	24		170	
19	USSL-19-FE/LR-080316	Front Entrance and Living Room	mg/Kg	1.8	J	5.9	J	250		300	
20	USSL-20-FE/RE-080316	Front and Rear Entrance	mg/Kg	4.7		8.5		290		270	
20	USSL-20-PA-080316	Play Area	mg/Kg	5.1		6	J	91		260	
21	USSL-21-BR-080316	Bedroom	mg/Kg	1.2	J	1.8	J	19		63	
21	USSL-21-FE/LR-080316	Front Entrance and Living Room	mg/Kg	0.98	J	3.6	J	12		330	
24	USSL-24-BR-080816	Bedroom	mg/Kg	3.8	J	7.3	J	130	J+	320	
24	USSL-24-FE/RE-080816	Front and Rear Entrance	mg/Kg	9.1		22		450		880	
26	USSL-26-BR-080416	Bedroom	mg/Kg	0.46	J	3.9	J-	16		120	
26	USSL-26-FE/RE-080416	Front and Rear Entrance	mg/Kg	0.37	J	2.1	J-	18		130	
27	USSL-27-BR-080516	Bedroom	mg/Kg	2.8	J	8.9	J	110		230	
27	USSL-27-FE/LR-080516	Front Entrance and Living Room	mg/Kg	5.4	J	14		230		530	
28	USSL-28-FE/RE-080816	Front and Rear Entrance	mg/Kg	2.4	J	4.1		120		240	
28	USSL-28-LR-080816	Living Room	mg/Kg	1.1	J	3.7	J	52		210	
29	USSL-29-BR-080816	Bedroom	mg/Kg	1.4	J	2.8	J	46		85	
29	USSL-29-FE/RE-080816	Front and Rear Entrance	mg/Kg	2.3	J	2.9		50		45	J
30	USSL-30-BR-080516	Bedroom	mg/Kg	1.1	J	3.4		50		96	
30	USSL-30-FE/RE-080516	Front and Rear Entrance	mg/Kg	1.2	J	3.9	J	32		150	
31	USSL-31-BR-080816	Bedroom	mg/Kg	1.3	J	2.2	J	74		120	
31	USSL-31-FE/LR-080816	Front Entrance and Living Room	mg/Kg	1.7		4.9	J	120		490	
33	USSL-33-BR-080316	Bedroom	mg/Kg	1.2	J	4.3	J	33		110	

33	USSL-33-FE/RE-080316	Front and Rear Entrance	mg/Kg	2.2		3.9		160		280	
34	USSL-34-FE/RE-080916	Front and Rear Entrance	mg/Kg	3.6		4.3	J	95		150	
34	USSL-34-LR-080916	Living Room	mg/Kg	0.28	J	190	U	6.9		110	J
35	USSL-35-BR-080516	Bedroom	mg/Kg	1.2	J	2.6	J	46		110	
35	USSL-35-FE/LR-080516	Front Entrance and Living Room	mg/Kg	100		31		360		890	
36	USSL-36-FE-072916	Front Entrance	mg/Kg	16		14	J-	1400		1100	
37	USSL-37-BR-080316	Bedroom	mg/Kg	1.3	J	94	U	41		110	
37	USSL-37-FE/LR-080316	Front Entrance and Living Room	mg/Kg	1.6	J	7	J	68		600	
37	USSL-37-FE/LR-080316D	Front Entrance and Living Room	mg/Kg	1.8	J	62	U	56		99	
40	USSL-40-BR-080416	Bedroom	mg/Kg	3	J	2.2	J-	210		130	
40	USSL-40-FE/LR-080416	Front Entrance and Living Room	mg/Kg	11		11	J-	310		300	
42	USSL-42-BR-080416	Bedroom	mg/Kg	0.72	J	5.9	J-	19		110	
42	USSL-42-FE/LR-080416	Front Entrance and Living Room	mg/Kg	2.1	J	3.3	J-	150		91	
43	USSL-43-BR-080516	Bedroom	mg/Kg	1.2	J	34	U	470	J	67	
43	USSL-43-FE/RE-080516	Front and Rear Entrance	mg/Kg	3.7	J	5.9	J	91		580	
44	USSL-44-BR-080416	Bedroom	mg/Kg	1.6	J	4.4	J-	62		500	
44	USSL-44-FE/RE-080416	Front and Rear Entrance	mg/Kg	3	J	9.5	J-	120		390	
45	USSL-45-FE/RE-072916	Front and Rear Entrance	mg/Kg	2.4	J	11	J-	470		470	
46	USSL-46-FE/RE-080416	Front and Rear Entrance	mg/Kg	14	J	13	J-	600	J	550	
46	USSL-46-LR-080416	Living Room	mg/Kg	2.7		5.9	J-	99		230	
47	USSL-47-BR-080416	Bedroom	mg/Kg	2.3		4	J-	55		150	
47	USSL-47-FE/LR-080416	Front Entrance and Living Room	mg/Kg	6.5		8.3	J-	380		320	
49	USSL-49-FE-080516	Front Entrance	mg/Kg	0.86	J	5.1	J	1200		150	
49	USSL-49-PA-080516	Play Area	mg/Kg	1.3	J	1.8	J	87		86	
50	USSL-50-BR-080416	Bedroom	mg/Kg	2.3	J	5	J-	37		100	
50	USSL-50-FE/RE-080416	Front and Rear Entrance	mg/Kg	3.2		6.3	J-	110		120	
50	USSL-50-LR-080416	Living Room	mg/Kg	2.4	J	5.8	J-	51		120	
51	USSL-51-FE/RE-080516	Front and Rear Entrance	mg/Kg	1.2	J	4.6	J	68		530	
51	USSL-51-LR-080516	Living Room	mg/Kg	1.3	J	3.2	J	54		450	
52	USSL-52-FE/LR-080916	Front Entrance and Living Room	mg/Kg	1.5	J	2.9	J	470		140	

52	USSL-52-BR-080916	Bedroom	mg/Kg	2.5	J	2.4	J	15	J	74
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Notes:

- * Totals based on a weighted average
- NA Not available
- J The analyte was positively identified; the associated value is the approximate concentration
- J- The analyte was positively identified; the associated value is the approximate concentration and may be biased low
- U The analyte was analyzed for; but was not detected at or above the associated value (reporting limit)

Attachment VII

US Smelter and Lead Refinery Site Dust Screening Level for Lead



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
9311 GROH ROAD
GROSSE ILE, MI 48138

MEMORANDUM

SUBJECT: Development of an Indoor Dust Screening Criteria for the USS Lead Site

FROM: Keith Fusinski, PhD Toxicologist US EPA
Superfund Division, Remedial Response Branch #1, Remedial Response Section #1

TO: Jim Mitchell, On-Scene Coordinator US EPA
Superfund Division, Emergency Response Branch #2, Emergency Response Section #4

AND

Kristina Behnke, On-Scene Coordinator US EPA
Superfund Division, Emergency Response Branch #2, Emergency Response Section #3

DATE: 8/10/2016

The Integrated Exposure Uptake Biokinetic (IEUBK) model used by the US Environmental Protection Agency (USEPA) uses the concentration of indoor dust as a key parameter to evaluate risks to children from lead in soil. EPA separates dust into fine ($<150 \mu\text{m}$) and coarse ($>150 \mu\text{m}$) fractions. It has been shown that the fine particle size is the fraction that is most likely to adhere to children's hands and be ingested. In addition, more recent information also indicates that there is a potential for enrichment of lead in smaller sized particles and increased bioavailability (USEPA 2016). Using only the fine particle size concentration for screening can improve the accuracy of exposure and risk calculations in lead risk assessments.

The IEUBK model (version 1.1 Build 11) was used to determine an indoor dust screening level for lead. The default assumption in the model is that the concentration of lead in indoor dust is 70% of the concentration of lead in outdoor soil (Brattin and Griffin - 2011). US EPA recommends that lead concentrations in residential soil do not exceed 400 parts per million (ppm) in soil.

The modeling was performed using default inputs from the IEUBK model for diet, drinking water, air concentration and bioavailability. The IEUBK model was run using 400 ppm for lead in soil and modeled children 0 to 84 months of age. The calculated screening level to protect this population from a current US EPA acceptable blood lead level of $10 \mu\text{g/dL}$ is **316 ppm** of lead in

dust. This concentration should be used when evaluating the fine particle size fraction of lead dust contamination.

REFERENCES

Brattin and Griffin - 2011 - William Brattin, Susan Griffin. Evaluation of the Contribution of Lead in Soil to Lead in Dust at Superfund Sites. Human and Ecological Risk Assessment: An International journal Vol. 17, Iss. 1, 2011.

USEPA 2016 - OLEM Directive 9200.1-128. Recommendations for Sieving Soil and Dust Samples at Lead Sites for Assessment of Incidental Ingestion.

ATTACHMENT VIII
Indiana State Department of Health Wipe Sample Results

Sample Date	Address	Component Location	Lead Result
8/3/2016	██████████	Living Room Window Trough	2000 µg/ft2
8/3/2016	██████████	Child's Bedroom Window Trough	40 µg/ft2
8/3/2016	██████████	Front Entry Floor	13 µg/ft2
8/3/2016	██████████	Rear Entry Floor	12 µg/ft2
8/3/2016	██████████	Bedroom Window Trough	36 µg/ft2
8/3/2016	██████████	Rear Entry Floor	28 µg/ft2
8/3/2016	██████████	Front Entry Floor	12 µg/ft2
8/3/2016	██████████	Child's Bedroom Floor	6.8 µg/ft2
8/2/2016	██████████	Front Entry Floor	<5 µg/ft2
8/2/2016	██████████	Rear Entry Floor	<5 µg/ft2
8/2/2016	██████████	Bedroom 2 Floor	<5 µg/ft2
8/2/2016	██████████	Bedroom 4 Floor	<5 µg/ft2
8/1/2016	██████████	Living Room Window Trough	280 µg/ft2
8/1/2016	██████████	Playroom Window Trough South	260 µg/ft2
8/1/2016	██████████	Playroom Window Trough West	73 µg/ft2
8/1/2016	██████████	Playroom Sill West	45 µg/ft2
8/1/2016	██████████	Rear Entry Floor	28 µg/ft2
8/1/2016	██████████	Playroom Floor South Wall	14 µg/ft2
8/1/2016	██████████	Front Entry Floor	9.9 µg/ft2
8/1/2016	██████████	Playroom Floor West Wall	9.1 µg/ft2
8/3/2016	██████████	Front Entry Floor	420 µg/ft2
8/3/2016	██████████	Child's Bedroom Window Trough	200 µg/ft2
8/3/2016	██████████	Rear Entry Floor	36 µg/ft2
8/2/2016	██████████	Kitchen Window Trough	660 µg/ft2
8/2/2016	██████████	Rear Entry Floor	37 µg/ft2
8/2/2016	██████████	Front Entry Floor	14 µg/ft2
8/3/2016	██████████	Child's Bedroom Window Trough	850 µg/ft2
8/3/2016	██████████	Rear Entry Floor	15 µg/ft2
8/3/2016	██████████	Bedroom Floor East Wall	9.8 µg/ft2
8/3/2016	██████████	Front Entry Floor	5.2 µg/ft2

8/2/2016		Front Entry Floor	<5	µg/ft2
8/2/2016		Rear Entry Floor	<5	µg/ft2
8/2/2016		Bedroom 2 Floor	<5	µg/ft2
8/2/2016		Kitchen Floor	<5	µg/ft2
8/2/2016		Living Room Window Trough	290	µg/ft2
8/2/2016		Child's Bedroom Window Trough	290	µg/ft2
8/2/2016		Child's Bedroom Floor	8	µg/ft2
8/2/2016		Front Entry Floor	15	µg/ft2
8/2/2016		Rear Entry Floor	8	µg/ft2
8/2/2016		Bedroom 3 Floor	7.4	µg/ft2
8/2/2016		Bedroom 1 Floor	6.5	µg/ft2
8/1/2016		Rear Bedroom Window Trough	390	µg/ft2
8/1/2016		Upstairs Bedroom Window Trough	310	µg/ft2
8/1/2016		Rear Entry Floor	73	µg/ft2
8/1/2016		Front Entry Floor	69	µg/ft2
8/1/2016		Rear Bedroom Floor	24	µg/ft2
8/1/2016		Upstairs Bedroom Floor	17	µg/ft2
8/1/2016		Front Entry Floor	12	µg/ft2
8/1/2016		Rear Entry Floor	8.7	µg/ft2
8/1/2016		Bedroom 2 Floor	7.2	µg/ft2
8/1/2016		Kitchen Floor	5.8	µg/ft2
8/2/2016		Living Room Window Trough	2100	µg/ft2
8/2/2016		Front Entry Floor	13	µg/ft2
8/2/2016		Rear Entry Floor	<5	µg/ft2
8/2/2016		Child's Bedroom Floor	<5	µg/ft2
8/2/2016	Carrie Gosch School	Entry "L" Floor Mat	<5	µg/ft2
8/2/2016	Carrie Gosch School	Entry "L" Floor Tile	<5	µg/ft2
8/1/2016		Front Entry Floor	33	µg/ft2
8/1/2016		Rear Entry Floor	12	µg/ft2
8/1/2016		Bedroom 1 Floor	6.9	µg/ft2
8/1/2016		Bedroom 4 Floor	<5	µg/ft2

ATTACHMENT IX

**ORIGINAL ACTION MEMORANDUM
DATED JANUARY 22, 2008**

ATTACHMENT X

**AMENDED ACTION MEMORANDUM
DATED AUGUST 13, 2008**

ATTACHMENT XI

**SECOND AMENDED ACTION MEMORANDUM
DATED SEPTEMBER 12, 2011**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

EPA Region 5 Records Ctr.



286112

JAN 22 2008

REPLY TO THE ATTENTION OF:

MEMORANDUM

SUBJECT: ACTION MEMORANDUM - Request to Conduct a Time-Critical Removal Action at the residential portion of the USS Lead Site, 5300 Kennedy Avenue (the area bounded by Chicago Avenue to the north, Parish Avenue to the east, USS Lead to the south and Aster Avenue to the west), East Chicago, Indiana, Lake County, Indiana (053J)

FROM: Fredrick A. Micke, On-Scene Coordinator
Emergency Response Branch 2 -- Section 3

TO: Richard C. Karl, Director
Superfund Division

THRU: Linda M. Nachowicz, Chief
Emergency Response Branch 2 *fw*

I. PURPOSE

The purpose of this memorandum is to request and document your approval to expend up to \$472,110 to perform a time critical removal action to mitigate threats to public health, welfare, and the environment in residential areas adjacent to the USS Lead Site in East Chicago (Lake County), Indiana. The response action is necessary to address the release and the threat of future releases of lead contamination in these residential areas.

The response actions to the release and potential release of hazardous materials will be conducted in accordance with Section 104(a)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, (CERCLA), 42 U.S.C. § 9604(a)(1) to abate the further release into the environment. The presence of lead contaminated soil with concentrations up to 3,000 ppm which is above the regulatory removal action level of 1,200 ppm in residential areas makes this a time-critical removal action.

There are no nationally significant or precedent setting issues associated with the residential portion of the USS Lead Site. This Site is proposed for the National Priorities List.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID# IND047030226

The USS Lead Site includes the residential area north of the US Smelter and Lead facility in East Chicago, Indiana. The area is roughly bounded by Aster Street, Chicago Avenue, Parish Avenue, and 151st Street and includes about 1200 homes, a small number of parks, open space as a part of the railroad right-of-way, schools, and public buildings. Some properties in the residential area have levels of lead elevated above U.S. EPA cleanup levels. The likely source for the lead contamination is the USS Lead facility.

The US Smelter and Lead facility (USS Lead) was a primary and secondary smelter of lead in the East Chicago, Indiana area. It began operations around 1906 and ended in 1985. From about 1920 until 1973, USS Lead was a primary smelter of lead. This included a refining process to create high quality lead free of bismuth. From 1973 until its closure in 1985, USS Lead was a secondary smelter and a reprocessor of car batteries. The secondary refinery operations included: battery breaking with tank treatment of spent battery acid at a rate of 16,000 gallons per day; baghouse dust collection with storage in on-site waste piles of up to 8,000 tons of flu dust; and blast furnace slag disposal, which was deposited in the wetland adjacent to and along the southern boundary of the facility. Secondary lead recovery operations ceased in 1985. USS Lead paid out a settlement to fund the operation and maintenance at the closed and remediated facility in an agreement with the Resource Conservation and Recovery Act (RCRA) Corrective Action part of the U.S. EPA.

The East Chicago neighborhood, around USS Lead, has been an area of intense industrial activity dating back to the early 1900's. Smelting and other metal related processes dominated the activities in the area. Many of the companies involved in metal work included lead related processes which operated smelting and lead compound production. As a part of their activities, the companies in the area generated lead product or waste in a particulate form. The potential emission sources at these facilities include: furnace stacks, waste piles, and spills of lead products. Chronic airborne pollution from USS Lead and other facilities in the area is the probable source of the lead contamination in the area.

The Indiana Department of Environmental Management (IDEM) sampled some of the residential properties to the north of USS Lead in 1985. IDEM found elevated lead levels in these residential yards and attributed the contamination to USS Lead. In September of 1985, the Indiana State Board of Health found USS Lead in violation of state law and made the statement that the lead contaminated soils may pose a risk to human health and the environment. IDEM referred the USS Lead facility to U.S. EPA for cleanup.

Since 1985, U.S. EPA RCRA Corrective Action has overseen the remediation and management of lead-contaminated soils within the boundaries of the U.S. Smelter and Lead Refinery, Inc. facility. The cleanup efforts at the facility included the placement of

the contamination in a Corrective Action Management Unit (CAMU) and the remediation of the on-site wetlands. In 2003, U.S. EPA sampled soils in the residential area north of USS Lead as a part of the RCRA Corrective Action investigation. These sampling results showed some yards to have high levels of lead contamination. Most of the yards with the highest lead sampling results were in the southern region of the residential area.

In Region 5, the Environmental Justice (EJ) Criteria for Indiana is: the low income percentage is 58% or greater and/or the minority percentage is 28% or greater. To meet the environmental justice (EJ) criteria, the area within 1 mile of the Site must have a population that is twice the state low-income percentage and/or twice the state minority percentage. At this site, the low-income percentage is 58% and the minority percentage is 92%. Therefore, this Site does meet the Region's EJ criteria based on demographics as identified in the "Region 5 Superfund EJ Analysis USS Lead Site, East Chicago, IN" (Attachment 2).

III. THREATS TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at the USS Lead Site present an imminent and substantial endangerment to the public health, welfare, and the environment and meet the criteria for a time-critical removal action provided for in Section 300.415 (b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), as amended, 40 C.F.R. Part 300. The criteria include, but are not limited to the following:

i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

Lead contaminated-soil is situated throughout the residential community near the site. Samples taken by U.S. EPA of the soil in specific residential properties showed elevated concentrations of lead. Surface soil samples collected at 11 properties showed levels of lead exceeding 1,200 ppm. The highest sample found had a lead level of 3,000 ppm. This exceeds the regulatory removal action level of 1,200 ppm.

ii) Elevated levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface.

U.S. EPA sampling verified many of these results. There are elevated levels of hazardous wastes present at the residential areas surrounding the USS Lead Site. Surface soil samples collected at 11 properties showed levels of lead exceeding 1,200 ppm. The highest sample found had a lead level of 3,000 ppm which exceeds the regulatory removal action level of 1,200 ppm.

iii) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

The Site Assessment documented surface soil samples with elevated total lead concentrations of up to 3000 mg/kg. Heavy rains may cause further migration of contaminants off site. Winds could cause dust particles containing heavy metals to continue to migrate into the surrounding community. These weather conditions could result in a continued release of the hazardous wastes described herein to the surrounding soil, air and surface water.

iv) The availability of other appropriate federal or state response mechanisms to respond to the release.

The State of Indiana does not have the financial resources to eliminate this threat.

IV. ENDANGERMENT ASSESSMENT

Given the site conditions, the nature of the suspected hazardous substances off-site and the potential exposure pathways described in Sections II and III above, the actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response actions selected in the Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

The response actions described in this memorandum directly address actual or potential releases of hazardous substances on Site, which pose an imminent and substantial endangerment to public health, or welfare, or the environment. Removal activities on Site will include:

- 1) Prepare a work plan that includes tasks and time line for the activities as well as a site Health and Safety Plan addressing continuous monitoring of airborne contaminants and dust control measures.
- 2) Obtain site access to conduct a removal action from those residences which exceeded 1,200 ppm lead as determined by U.S. EPA's Site Assessment of June, 2006. Lead is considered the main contaminant of concern. Removal cleanup levels for lead are 400 ppm for the residential properties, as noted in guidance from ATSDR. Impacted residences will be cleaned to these action levels.
- 3) Provide site security measures as required.
- 4) If temporary, on-site disposal is to be conducted, consolidate hazardous waste

covering the surface of the property to create a temporary storage area.

- 5) If temporary, on-site disposal is to be conducted, construct a temporary cover over consolidation area and areas exceeding the established action levels for the metals of concern.
- 6) Excavate and dispose of significantly contaminated soil located at residential properties and conduct confirmation sampling of these areas.
- 7) Backfill the excavated areas with clean material and topsoil. Restore and vegetate to prevent soil erosion.
- 8) Properly address any additional hazardous waste and/or materials identified during the removal action.
- 9) Ensure that the proposed cleanup adequately protects human health, welfare, and the environment from the hazardous waste described in this Action Memo.

The removal action will be conducted in a manner not inconsistent with the NCP. The OSC has initiated planning for provision of post-removal Site control consistent with the provisions of Section 300.415(1) of the NCP. Elimination of all surface threats is, however, expected to minimize the need for post-removal Site control.

In 2006, EPA obtained and analyzed soil samples collected from 13 residences. It selected the 13 residences after reviewing the results of XRF data gathered in 2003. The XRF data consisted of approximately 80 data points scattered throughout the residential portion of the USS Lead site. The XRF results showed the highest concentrations of lead in soils in the area immediately north and northeast of the USS Lead facility with concentrations generally diminishing as the distance from the USS Lead facility increased. The 13 residences sampled were located in areas that EPA suspected had concentrations of lead equal to or greater than 1200 ppm.

At this time, EPA has found 11 properties that meet the action level for a removal action (lead concentrations in soils of equal to or greater than 1200 ppm). This number may rise as further information may indicate additional homes that meet the action level.

U.S. EPA Site Assessment is working with IDEM on evaluating the site and has initiated the preliminary steps of the NPL listing process. Future activities will be coordinated with the Removal and Remedial programs based on the outcome of that process.

U.S. EPA conducted further sampling in East Chicago, IN, in order to better understand the lead contamination in neighborhood soils. In order to accomplish this U.S. EPA collected data that determined the applicability of real-time field based screening approaches at the site by establishing a calibration between the XRF (field portable X-ray fluorescence) and lab data. While all samples were sent to the lab for analysis, data from the XRF was also collected in the field in order to demonstrate the applicability of

XRF methods at this site. The data was used to develop a site-specific relationship between XRF and lab data, and determined that the XRF met data quality objectives for future work at this site.

The removal activities are expected to take 24 on-site working days to complete.

As determined by U.S. EPA, all hazardous substances, pollutants, or contaminants removed off-site pursuant to this removal action for treatment, storage, or disposal shall be treated, stored, or disposed of at a facility in compliance with Off-Site Rule, 40 CFR § 300.440.

The response actions described in this memorandum directly address actual or threatened releases of hazardous substances, pollutants, or contaminants at the Site which may pose an imminent and substantial endangerment to public health and safety and the environment. These response actions do not impose a burden on the affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

REMOVAL PROJECT CEILING ESTIMATE

EXTRAMURAL COSTS:

Regional Removal Allowance Costs:

Total Cleanup Contractor Costs	\$376,800
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(This cost category includes estimates for: ERRS, subcontractors, Notices to Proceed, and Interagency Agreements with other Federal Agencies. Includes 20% Contingency.)

Other Extramural Costs not Funded from the Regional Allowance:

Total START, including multiplier costs	\$16,625
<u>Subtotal, Extramural Costs</u>	<u>\$393,425</u>
Extramural Costs Contingency (20% of Subtotal, Extramural Costs)	<u>\$78,685</u>
TOTAL, REMOVAL ACTION PROJECT CEILING	\$472,110

Applicable or Relevant and Appropriate Requirements

All applicable, relevant, and appropriate requirements (ARARs) of Federal and State law will be complied with to the extent practicable. An e-mail was sent to Mr. Harry Atkinson of IDEM asking for any State of Indiana ARARs that may apply.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Failing to take, or delaying action will increase the potential that toxic hazardous substances will be released, thereby threatening the adjacent population and the environment.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this site is contained in the Enforcement Confidential Addendum.

The total U.S. EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be \$752,479.¹

$$(\$472,110 + \$10,000 \text{ [Headquarters]}) + (55.15\% \times \$472,110 + \$10,000) = \$752,479$$

¹Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

IX RECOMMENDATION

This decision document represents the selected removal action for the residential portion of the USS Lead Site located in East Chicago, IN. It was developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the Site (Attachment 1). Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a removal and I recommend your approval of the proposed removal action.

The total removal action project ceiling if approved will be \$472,110. Of this, an estimated \$376,800 may be used for cleanup contractor costs. You may indicate your decision by signing below.

APPROVE  DATE: 1-22-00
Director, Superfund Division

DISAPPROVE _____ DATE: _____
Director, Superfund Division

**Enforcement Addendum
Attachments**

1. Administrative Record Index
2. Environmental Justice Analysis
3. Enforcement Addendum
4. Detailed Cleanup Contractor Cost Estimate
5. Independent Government Cost Estimate

cc: D. Chung, U.S. EPA 5202G
M. Chezick, U.S. Department of Interior, w/o Enf. Addendum
E. Admire, IDEM w/o Enf. Addendum

-9-

BCC PAGE

(REDACTED 1 PAGE)

NOT RELEVANT TO THE SELECTION OF THE REMOVAL ACTION

ATTACHMENT 1

**ADMINISTRATIVE RECORD INDEX
USS LEAD
EAST CHICAGO, IN**



ATTACHMENT 1

U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL ACTION

ADMINISTRATIVE RECORD FOR USS LEAD SITE EAST CHICAGO, LAKE COUNTY, INDIANA

ORIGINAL
DECEMBER 7, 2007

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	04/28/06	U.S. EPA/ CRL	File	Generic Chain of Custody for the US Smelter Lead Refinery	26
2	05/02/06	U.S. EPA/ CRL	File	Generic Chain of Custody for the US Smelter Lead Refinery	17
3	05/26/06	U.S. EPA/ CRL	File	Review of Region 5 Data for US Smelter Lead Re- finery (ICP and GFAA Metals for Waters and Soils)	224
4	00/00/00	Micke, F., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum: Request to Conduct a Time Critical Removal Action at the Residential Portion of the USS Lead Site (PENDING)	

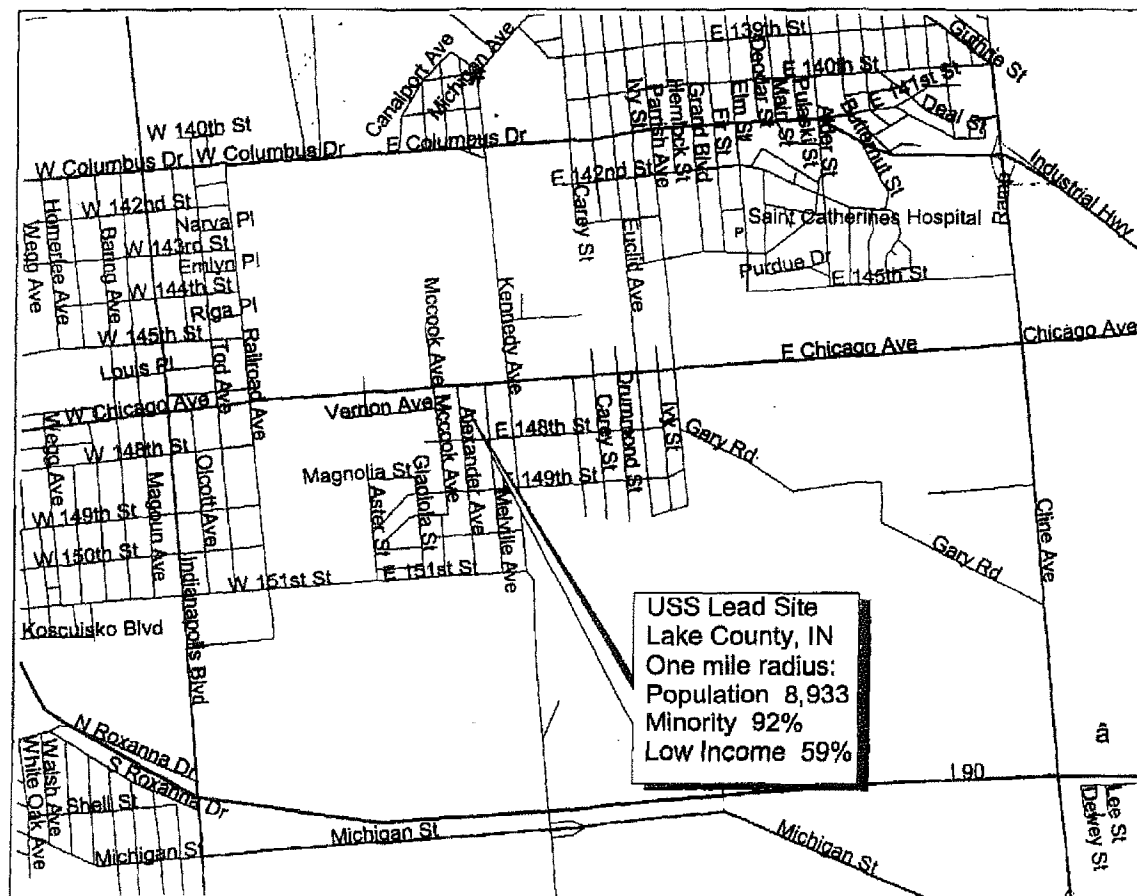
ATTACHMENT 2

**ENVIRONMENTAL JUSTICE
USS LEAD
EAST CHICAGO, IN**

Region 5 Superfund EJ Analysis

USS Lead Site

East Chicago, IN



State of Indiana averages:

Minority: 14%

Low Income: 29%

U.S. EPA Region 5

Environmental Justice Case Criteria for State of Indiana

Minority: 28% or greater

Low Income: 58% or greater

USS Lead Site
Lake County, IN
One mile radius:
Population 8,933
Minority 92%
Low Income 59%

0 0.4 0.8 1.2 1.6 2 Miles

Date of Map: 10/5/05

Sources of Map: Census 2000 Database/
ArcView 3.0

ATTACHMENT 3

ENFORCEMENT ADDENDUM
USS LEAD SITE
EAST CHICAGO, LAKE COUNTY, INDIANA

(REDACTED 6 PAGES)

ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY

ATTACHMENT 4

DETAILED CLEANUP CONTRACTOR COST ESTIMATE
USS LEAD SITE
EAST CHICAGO, LAKE COUNTY, INDIANA

(REDACTED 1 PAGE)

ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY

ATTACHMENT 4

**INDEPENDENT GOVERNMENT COST ESTIMATE
USS LEAD SITE
EAST CHICAGO, LAKE COUNTY, INDIANA**

(REDACTED 1 PAGE)

**ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY**

ATTACHMENT X

**AMENDED ACTION MEMORANDUM
DATED AUGUST 13, 2008**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

EPA Region 5 Records Ctr.



299818

AUG 13 2008

REPLY TO THE ATTENTION OF

MEMORANDUM

SUBJECT: **ACTION MEMORANDUM #2** - Request for a Ceiling Increase to Complete the Time-Critical Removal Action at the USS Lead Site, 5300 Kennedy Avenue (the area bounded by Chicago Avenue to the north, Parish Avenue to the east, USS Lead to the south and Aster Avenue to the west), East Chicago, Indiana, Lake County, Indiana (053J)

FROM: Fredrick A. Micke, On-Scene Coordinator
Emergency Response Branch 1 -- Section 3

TO: Richard C. Karl, Director
Superfund Division

THRU: Jason El-Zein, Chief
Emergency Response Branch 1

I. PURPOSE

The purpose of this memorandum is to request and document your approval to increase the project ceiling in order to complete the ongoing, time-critical, removal action. The ceiling increase is necessary to continue mitigation of threats to public health, welfare and the environment posed by the presence of lead-contaminated soil at the USS Lead Site. The proposed project ceiling increase totals \$511,950. When combined with the previously approved project ceiling of \$472,110, the total allowable project funding expenditure will be \$984,060.

The United States Environmental Protection Agency (U.S. EPA) and Indiana Department of Environmental Management have documented the presence of lead-contaminated soil at the Site. Proper disposal of the lead-contaminated soil will alleviate further impacts to human health, the environment and surrounding properties.

Since beginning the time-critical removal action, U.S. EPA has completed removal actions at 5 of the identified properties (except for reseeding the property). In addition, U.S. EPA has partially completed 1 of the identified properties. U.S. EPA has not yet begun removal work at 9 of the identified properties. The ceiling increase will allow U.S. EPA to complete the planned removal action.

Based upon observations made during the initial removal actions, U.S. EPA has concluded that the scope of the lead-contamination is more than anticipated and the surface area (footprint) of the lead-contamination is greater than what was stated in the original Action Memorandum (Action Memo). To date, U.S. EPA has disposed of approximately 1250 tons of lead-contaminated soil. This quantity is approximately equal to the 1100 cubic yards estimated in the original Action Memo. The removal work described in this Action Memo will require an estimated 30 additional working days to complete.

There are no nationally significant or precedent setting issues associated with the residential portion of the USS Lead Site. This Site is proposed for the National Priorities List.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID# IND047030226

The USS Lead Site includes the residential area north of the US Smelter and Lead facility in East Chicago, Indiana. The area is roughly bounded by Aster Street, Chicago Avenue, Parish Avenue, and 151st Street and includes about 1200 homes, a small number of parks, open space as a part of the railroad right-of-way, schools, and public buildings. Some properties in the residential area have levels of lead elevated above U.S. EPA cleanup levels. The likely source for the lead contamination is the USS Lead facility and other industrial sources in the East Chicago, Indiana area.

The US Smelter and Lead facility (USS Lead) was a primary and secondary smelter of lead in the East Chicago, Indiana area. It began operations around 1906 and ended in 1985. From about 1920 until 1973, USS Lead was a primary smelter of lead. This included a refining process to create high quality lead free of bismuth. From 1973 until its closure in 1985, USS Lead was a secondary smelter and a reprocessor of car batteries. The secondary refinery operations included: battery breaking with tank treatment of spent battery acid at a rate of 16,000 gallons per day; baghouse dust collection with storage in on-site waste piles of up to 8,000 tons of flu dust; and blast furnace slag disposal, which was deposited in the wetland adjacent to and along the southern boundary of the facility. Secondary lead recovery operations ceased in 1985. USS Lead paid out a settlement to fund the operation and maintenance at the closed and remediated facility in an agreement with the Resource Conservation and Recovery Act (RCRA) Corrective Action part of the U.S. EPA.

The East Chicago neighborhood, around USS Lead, has been an area of intense industrial activity dating back to the early 1900's. Smelting and other metal related processes dominated the activities in the area. Many of the companies involved in metal work included lead related processes which operated smelting and lead compound production. As a part of their activities, the companies in the area generated lead product or waste in a particulate form. The potential emission sources at these facilities include: furnace stacks, waste piles, and spills of lead products. Chronic

airborne pollution from USS Lead and other facilities in the area is the probable source of the lead contamination in the area.

The Indiana Department of Environmental Management (IDEM) sampled some of the residential properties to the north of USS Lead in 1985. IDEM found elevated lead levels in these residential yards and attributed the contamination to USS Lead. In September of 1985, the Indiana State Board of Health found USS Lead in violation of state law and made the statement that the lead contaminated soils may pose a risk to human health and the environment. IDEM referred the USS Lead facility to U.S. EPA for cleanup.

Since 1985, U.S. EPA RCRA Corrective Action has overseen the remediation and management of lead-contaminated soils within the boundaries of the U.S. Smelter and Lead Refinery, Inc. facility. The cleanup efforts at the facility included the placement of the contamination in a Corrective Action Management Unit (CAMU) and the remediation of the on-site wetlands. In 2003, U.S. EPA sampled soils in the residential area north of USS Lead as a part of the RCRA Corrective Action investigation. These sampling results showed some yards to have high levels of lead contamination. Most of the yards with the highest lead sampling results were in the southern region of the residential area.

In Region 5, the Environmental Justice (EJ) Criteria for Indiana is: the low income percentage is 58% or greater and/or the minority percentage is 28% or greater. The State of Indiana averages are 29% low-income and 14% minority. To meet the environmental justice (EJ) criteria, the area within 1 mile of the Site must have a population that is twice the state low-income percentage and/or twice the state minority percentage. At this site, the low-income percentage is 59% and the minority percentage is 92%. Therefore, this Site does meet the Region's EJ criteria based on demographics as identified in the "Region 5 Superfund EJ Analysis USS Lead Site, East Chicago, IN" (See Original Action Memo, Attachment 3).

Removal Actions to Date

On June 9, 2008, U.S. EPA mobilized its Emergency Response and Removal Service (ERRS) to the USS Lead Site to initiate time-critical removal activities. Specifically, U.S. EPA has completed the following activities to date:

- 1) Implementation of the site health and safety and work plans. Establishment of a command post and work zones;
- 2) Obtained site access to conduct removal actions at those residences where the concentrations of lead in property soils exceeded 1,200 ppm lead as determined by U.S. EPA's Site Assessment of June, 2006. U.S. EPA considers lead to be the main contaminant of concern. Removal action levels for lead are 400 ppm for the residential properties, as noted in guidance from ATSDR. Impacted residences will be cleaned to these action levels;

- 3) Provision of site security measures as required;
- 4) Excavation and disposal of lead-contaminated soil located at residential properties and conduct of confirmation sampling of these areas;
- 5) Backfilled the excavated areas with clean material and topsoil.

Justification for the Project Ceiling Increase

- 1) The area (footprint) of the lead-contaminated soils on most properties worked on to date has been much greater than U.S. EPA anticipated.
- 2) The first area worked on covered two property addresses and was vacant land. This work area was misidentified on the 2006 sampling data. These 2 properties alone took over one month to complete. Six hundred (600) tons of lead-contaminated soil were removed from the 2 properties.
- 3) The depth of the lead-contamination has been greater than anticipated. On most properties, the depth to native sand is approximately 2 feet. U.S. EPA has found that the entire 'depth-to-sand' is usually contaminated.

III. THREATS TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at the USS Lead Site present an imminent and substantial endangerment to the public health, welfare, and the environment and meet the criteria for a time-critical removal action provided for in Section 300.415 (b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), as amended, 40 C.F.R. Part 300. The criteria include, but are not limited to the following:

- i) **Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.**
- ii) **Elevated levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface.**
- iii) **Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.**
- iv) **The availability of other appropriate federal or state response mechanisms to respond to the release.**

Please refer to the original Action Memorandum dated January 22, 2008 (Attachment 3), for detailed threat information. Public health and environmental threats and

contaminants of concern remain the same; only the volume of lead-contaminated soil has changed.

The State of Indiana does not have the financial resources to eliminate this threat.

IV. ENDANGERMENT ASSESSMENT

Given the site conditions, the nature of the suspected hazardous substances off-site and the potential exposure pathways described in Sections II and III above, the actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response actions selected in the Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

The response actions described in this memorandum directly address actual or potential releases of hazardous substances on Site, which pose an imminent and substantial endangerment to public health, or welfare, or the environment. Removal activities on Site will include:

- 1) Obtain site access to conduct a removal action from those residences which exceeded 1,200 ppm lead as determined by U.S. EPA's Site Assessment of June, 2006. Lead is considered the main contaminant of concern. Removal action levels for lead are 400 ppm for the residential properties, as noted in guidance from ATSDR. Impacted residences will be cleaned to these action levels.
- 2) Provide site security measures as required.
- 3) If on-site disposal is to be conducted, consolidate hazardous waste covering the surface of the property to create a temporary storage area.
- 4) If on-site disposal is to be conducted, construct a temporary cover over consolidation area and areas exceeding the established action levels for the metals of concern.
- 5) Excavate and dispose of significantly contaminated soil located at residential properties and conduct confirmation sampling of these areas.
- 6) Backfill the excavated areas with clean material and topsoil. Restore and vegetate to prevent soil erosion.
- 7) Properly address any additional hazardous waste and/or materials identified during the removal action.

- 8) As of the date of this Action Memo, 6 properties have been excavated and backfilled. One (1) property has been excavated and is partially backfilled. Eight (8) properties have not been initiated.
- 9) Ensure that the proposed cleanup adequately protects human health, welfare, and the environment from the hazardous waste described in this Action Memo.

The removal action will be conducted in a manner not inconsistent with the NCP. The OSC has initiated planning for provision of post-removal Site control consistent with the provisions of Section 300.415(l) of the NCP. Elimination of all surface threats is, however, expected to minimize the need for post-removal Site control.

U.S. EPA has found 15 properties that meet the action level for a removal action. No additional properties will be added to this removal action.

The detailed cleanup contractor cost estimate is presented in Attachment 1 and estimated project costs are summarized below:

REMOVAL PROJECT CEILING ESTIMATE

Regional Removal Allowance Costs:	Original:	Increase:	Total:
Total Cleanup Contractor Costs: (This cost category includes estimates for ERRS and subcontractors, Notices to Proceed, and Interagency Agreements with Other federal Agencies. Includes a 20 % contingency)	\$376,800	\$402,000	\$778,800
Other Extramural Costs Not Funded	from the	Regional	Allowance:
Total START, including multiplier costs:	\$16,625	\$24,625	\$41,250
Extramural Subtotal	\$393,425	\$426,625	\$820,050
Extramural Contingency (20%)	\$78,685	\$85,325	\$164,010
TOTAL REMOVAL PROJECT CEILING	\$472,110	\$511,950	\$984,060

The response actions described in this memorandum directly address actual or threatened releases of hazardous substances, pollutants, or contaminants at the Site which may pose an imminent and substantial endangerment to public health and safety and the environment. These response actions do not impose a burden on the affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

Applicable or Relevant and Appropriate Requirements

All applicable, relevant, and appropriate requirements (ARARs) of Federal and State law will be complied with to the extent practicable (See Attachment 3).

As determined by U.S. EPA, all hazardous substances, pollutants, or contaminants removed off-site pursuant to this removal action for treatment, storage, or disposal shall be treated, stored, or disposed of at a facility in compliance with Off-Site Rule, 40 CFR § 300.440.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Failing to take, or delaying action will increase the potential that toxic hazardous substances will be released, thereby threatening the adjacent population and the environment.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this site is contained in the Enforcement Confidential Addendum.

The total U.S. EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be \$1,487,014.¹

$$(\$984,060 + \$10,000) + (49.59\% \times \$984,000 + \$10,000) = \$1,487,014$$

¹Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

IX RECOMMENDATION

This decision document represents the selected removal action for the residential portion of the USS Lead Site located in East Chicago, IN. It was developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the Site (Attachment 2). Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a removal and I recommend your approval of the proposed removal action.

If approved, the total removal action project ceiling will be \$984,060. Of this, an estimated \$942,810 may be used for cleanup contractor costs.

You may indicate your decision by signing below.

APPROVE  DATE: 8-13-08
Director, Superfund Division

DISAPPROVE _____ DATE: _____
Director, Superfund Division

Enforcement Addendum Attachments

1. Detailed Cleanup Contractor Cost Estimate/ Independent Government Cost Estimate
2. Administrative Record Index
3. Original Action Memorandum dated January 22, 2008

cc: D. Chung, U.S. EPA 5202G
M. Chezick, U.S. Department of Interior, w/o Enf. Addendum
E. Admire, IDEM w/o Enf. Addendum

BCC PAGE

(REDACTED 1 PAGE)

NOT RELEVANT TO THE SELECTION OF THE REMOVAL ACTION

ENFORCEMENT ADDENDUM

**USS LEAD SITE
EAST CHICAGO, ILLINOIS**

(REDACTED 9 PAGES)

**ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY**

ATTACHMENT 1

**DETAILED CLEANUP CONTRACTOR COST ESTIMATE
INDEPENDENT GOVERNMENT CLEANUP CONTRACTOR ESTIMATE
USS LEAD
EAST CHICAGO, IN**

The estimated cleanup contractor costs necessary to complete the removal action at the USS Lead Site, IN are as follows:

CONTRACTOR ESTIMATE:

Personnel	\$165,000
Equipment	\$75,000
T & D and	
Backfill Material	\$ 50,000
Miscellaneous	<u>\$45,000</u>
Sub-total	\$335,000
20% Contingency	<u>\$67,000</u>
Total	\$402,000

START ESTIMATE

Site work (300 hrs @ \$75/hr)	\$22,500
Equipment and miscellaneous	<u>\$2,125</u>
Total	\$24,625

ATTACHMENT 2

**ADMINISTRATIVE RECORD
FOR USS LEAD SITE
EAST CHICAGO, INDIANA**



ATTACHMENT 2

U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL ACTION

ADMINISTRATIVE RECORD FOR USS LEAD SITE EAST CHICAGO, LAKE COUNTY, INDIANA

ORIGINAL
JANUARY 22, 2008

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	04/28/06	U.S. EPA/ CRL	File	Generic Chain of Custody for the US Smelter Lead Refinery	26
2	05/02/06	U.S. EPA/ CRL	File	Generic Chain of Custody for the US Smelter Lead Refinery	17
3	05/26/06	U.S. EPA/ CRL	File	Review of Region 5 Data for US Smelter Lead Re- finery (ICP and GFAA Metals for Waters and Soils)	227
4	01/22/08	Micke, F., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum: Request to Conduct a Time Critical Removal Action at the Residential Portion of the USS Lead Site (PORTIONS OF THIS DOCUMENT HAVE BEEN REDACTED)	21

UPDATE #1
AUGUST, 4, 2008

1	06/17/08	Micke, F., U.S. EPA	Distribution List	Pollution Report (POLREP 1- Initial) for the USS Lead Site
2	00/00/00	Micke, F., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum #2: Request for a Ceiling In- crease to Complete the Time Critical Removal Action at the USS Lead Site (PENDING)

ATTACHMENT 3

ORIGINAL ACTION MEMORANDUM

DATED JANUARY 22, 2008

REDACTED COPY

ATTACHMENT IX

**ORIGINAL ACTION MEMORANDUM
DATED JANUARY 22, 2008**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

EPA Region 5 Records Ctr.



286112

JAN 22 2008

REPLY TO THE ATTENTION OF

MEMORANDUM

SUBJECT: ACTION MEMORANDUM - Request to Conduct a Time-Critical Removal Action at the residential portion of the USS Lead Site, 5300 Kennedy Avenue (the area bounded by Chicago Avenue to the north, Parish Avenue to the east, USS Lead to the south and Aster Avenue to the west), East Chicago, Indiana, Lake County, Indiana (053J)

FROM: Fredrick A. Micke, On-Scene Coordinator
Emergency Response Branch 2 -- Section 3

TO: Richard C. Karl, Director
Superfund Division

THRU: Linda M. Nachowicz, Chief
Emergency Response Branch 2 *fw*

I. PURPOSE

The purpose of this memorandum is to request and document your approval to expend up to \$472,110 to perform a time critical removal action to mitigate threats to public health, welfare, and the environment in residential areas adjacent to the USS Lead Site in East Chicago (Lake County), Indiana. The response action is necessary to address the release and the threat of future releases of lead contamination in these residential areas.

The response actions to the release and potential release of hazardous materials will be conducted in accordance with Section 104(a)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, (CERCLA), 42 U.S.C. § 9604(a)(1) to abate the further release into the environment. The presence of lead contaminated soil with concentrations up to 3,000 ppm which is above the regulatory removal action level of 1,200 ppm in residential areas makes this a time-critical removal action.

There are no nationally significant or precedent setting issues associated with the residential portion of the USS Lead Site. This Site is proposed for the National Priorities List.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID# IND047030226

The USS Lead Site includes the residential area north of the US Smelter and Lead facility in East Chicago, Indiana. The area is roughly bounded by Aster Street, Chicago Avenue, Parish Avenue, and 151st Street and includes about 1200 homes, a small number of parks, open space as a part of the railroad right-of-way, schools, and public buildings. Some properties in the residential area have levels of lead elevated above U.S. EPA cleanup levels. The likely source for the lead contamination is the USS Lead facility.

The US Smelter and Lead facility (USS Lead) was a primary and secondary smelter of lead in the East Chicago, Indiana area. It began operations around 1906 and ended in 1985. From about 1920 until 1973, USS Lead was a primary smelter of lead. This included a refining process to create high quality lead free of bismuth. From 1973 until its closure in 1985, USS Lead was a secondary smelter and a reprocessor of car batteries. The secondary refinery operations included: battery breaking with tank treatment of spent battery acid at a rate of 16,000 gallons per day; baghouse dust collection with storage in on-site waste piles of up to 8,000 tons of flu dust; and blast furnace slag disposal, which was deposited in the wetland adjacent to and along the southern boundary of the facility. Secondary lead recovery operations ceased in 1985. USS Lead paid out a settlement to fund the operation and maintenance at the closed and remediated facility in an agreement with the Resource Conservation and Recovery Act (RCRA) Corrective Action part of the U.S. EPA.

The East Chicago neighborhood, around USS Lead, has been an area of intense industrial activity dating back to the early 1900's. Smelting and other metal related processes dominated the activities in the area. Many of the companies involved in metal work included lead related processes which operated smelting and lead compound production. As a part of their activities, the companies in the area generated lead product or waste in a particulate form. The potential emission sources at these facilities include: furnace stacks, waste piles, and spills of lead products. Chronic airborne pollution from USS Lead and other facilities in the area is the probable source of the lead contamination in the area.

The Indiana Department of Environmental Management (IDEM) sampled some of the residential properties to the north of USS Lead in 1985. IDEM found elevated lead levels in these residential yards and attributed the contamination to USS Lead. In September of 1985, the Indiana State Board of Health found USS Lead in violation of state law and made the statement that the lead contaminated soils may pose a risk to human health and the environment. IDEM referred the USS Lead facility to U.S. EPA for cleanup.

Since 1985, U.S. EPA RCRA Corrective Action has overseen the remediation and management of lead-contaminated soils within the boundaries of the U.S. Smelter and Lead Refinery, Inc. facility. The cleanup efforts at the facility included the placement of

the contamination in a Corrective Action Management Unit (CAMU) and the remediation of the on-site wetlands. In 2003, U.S. EPA sampled soils in the residential area north of USS Lead as a part of the RCRA Corrective Action investigation. These sampling results showed some yards to have high levels of lead contamination. Most of the yards with the highest lead sampling results were in the southern region of the residential area.

In Region 5, the Environmental Justice (EJ) Criteria for Indiana is: the low income percentage is 58% or greater and/or the minority percentage is 28% or greater. To meet the environmental justice (EJ) criteria, the area within 1 mile of the Site must have a population that is twice the state low-income percentage and/or twice the state minority percentage. At this site, the low-income percentage is 58% and the minority percentage is 92%. Therefore, this Site does meet the Region's EJ criteria based on demographics as identified in the "Region 5 Superfund EJ Analysis USS Lead Site, East Chicago, IN" (Attachment 2).

III. THREATS TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

The conditions at the USS Lead Site present an imminent and substantial endangerment to the public health, welfare, and the environment and meet the criteria for a time-critical removal action provided for in Section 300.415 (b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), as amended, 40 C.F.R. Part 300. The criteria include, but are not limited to the following:

i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

Lead contaminated-soil is situated throughout the residential community near the site. Samples taken by U.S. EPA of the soil in specific residential properties showed elevated concentrations of lead. Surface soil samples collected at 11 properties showed levels of lead exceeding 1,200 ppm. The highest sample found had a lead level of 3,000 ppm. This exceeds the regulatory removal action level of 1,200 ppm.

ii) Elevated levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface.

U.S. EPA sampling verified many of these results. There are elevated levels of hazardous wastes present at the residential areas surrounding the USS Lead Site. Surface soil samples collected at 11 properties showed levels of lead exceeding 1,200 ppm. The highest sample found had a lead level of 3,000 ppm which exceeds the regulatory removal action level of 1,200 ppm.

iii) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

The Site Assessment documented surface soil samples with elevated total lead concentrations of up to 3000 mg/kg. Heavy rains may cause further migration of contaminants off site. Winds could cause dust particles containing heavy metals to continue to migrate into the surrounding community. These weather conditions could result in a continued release of the hazardous wastes described herein to the surrounding soil, air and surface water.

iv) The availability of other appropriate federal or state response mechanisms to respond to the release.

The State of Indiana does not have the financial resources to eliminate this threat.

IV. ENDANGERMENT ASSESSMENT

Given the site conditions, the nature of the suspected hazardous substances off-site and the potential exposure pathways described in Sections II and III above, the actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response actions selected in the Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

The response actions described in this memorandum directly address actual or potential releases of hazardous substances on Site, which pose an imminent and substantial endangerment to public health, or welfare, or the environment. Removal activities on Site will include:

- 1) Prepare a work plan that includes tasks and time line for the activities as well as a site Health and Safety Plan addressing continuous monitoring of airborne contaminants and dust control measures.
- 2) Obtain site access to conduct a removal action from those residences which exceeded 1,200 ppm lead as determined by U.S. EPA's Site Assessment of June, 2006. Lead is considered the main contaminant of concern. Removal cleanup levels for lead are 400 ppm for the residential properties, as noted in guidance from ATSDR. Impacted residences will be cleaned to these action levels.
- 3) Provide site security measures as required.
- 4) If temporary, on-site disposal is to be conducted, consolidate hazardous waste

covering the surface of the property to create a temporary storage area.

- 5) If temporary, on-site disposal is to be conducted, construct a temporary cover over consolidation area and areas exceeding the established action levels for the metals of concern.
- 6) Excavate and dispose of significantly contaminated soil located at residential properties and conduct confirmation sampling of these areas.
- 7) Backfill the excavated areas with clean material and topsoil. Restore and vegetate to prevent soil erosion.
- 8) Properly address any additional hazardous waste and/or materials identified during the removal action.
- 9) Ensure that the proposed cleanup adequately protects human health, welfare, and the environment from the hazardous waste described in this Action Memo.

The removal action will be conducted in a manner not inconsistent with the NCP. The OSC has initiated planning for provision of post-removal Site control consistent with the provisions of Section 300.415(1) of the NCP. Elimination of all surface threats is, however, expected to minimize the need for post-removal Site control.

In 2006, EPA obtained and analyzed soil samples collected from 13 residences. It selected the 13 residences after reviewing the results of XRF data gathered in 2003. The XRF data consisted of approximately 80 data points scattered throughout the residential portion of the USS Lead site. The XRF results showed the highest concentrations of lead in soils in the area immediately north and northeast of the USS Lead facility with concentrations generally diminishing as the distance from the USS Lead facility increased. The 13 residences sampled were located in areas that EPA suspected had concentrations of lead equal to or greater than 1200 ppm.

At this time, EPA has found 11 properties that meet the action level for a removal action (lead concentrations in soils of equal to or greater than 1200 ppm). This number may rise as further information may indicate additional homes that meet the action level.

U.S. EPA Site Assessment is working with IDEM on evaluating the site and has initiated the preliminary steps of the NPL listing process. Future activities will be coordinated with the Removal and Remedial programs based on the outcome of that process.

U.S. EPA conducted further sampling in East Chicago, IN, in order to better understand the lead contamination in neighborhood soils. In order to accomplish this U.S. EPA collected data that determined the applicability of real-time field based screening approaches at the site by establishing a calibration between the XRF (field portable X-ray fluorescence) and lab data. While all samples were sent to the lab for analysis, data from the XRF was also collected in the field in order to demonstrate the applicability of

XRF methods at this site. The data was used to develop a site-specific relationship between XRF and lab data, and determined that the XRF met data quality objectives for future work at this site.

The removal activities are expected to take 24 on-site working days to complete.

As determined by U.S. EPA, all hazardous substances, pollutants, or contaminants removed off-site pursuant to this removal action for treatment, storage, or disposal shall be treated, stored, or disposed of at a facility in compliance with Off-Site Rule, 40 CFR § 300.440.

The response actions described in this memorandum directly address actual or threatened releases of hazardous substances, pollutants, or contaminants at the Site which may pose an imminent and substantial endangerment to public health and safety and the environment. These response actions do not impose a burden on the affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

REMOVAL PROJECT CEILING ESTIMATE

EXTRAMURAL COSTS:

Regional Removal Allowance Costs:

Total Cleanup Contractor Costs	\$376,800
--------------------------------	-----------

(This cost category includes estimates for: ERRS, subcontractors, Notices to Proceed, and Interagency Agreements with other Federal Agencies. Includes 20% Contingency.)

Other Extramural Costs not Funded from the Regional Allowance:

Total START, including multiplier costs	\$16,625
<u>Subtotal, Extramural Costs</u>	<u>\$393,425</u>
Extramural Costs Contingency (20% of Subtotal, Extramural Costs)	<u>\$78,685</u>
TOTAL, REMOVAL ACTION PROJECT CEILING	\$472,110

Applicable or Relevant and Appropriate Requirements

All applicable, relevant, and appropriate requirements (ARARs) of Federal and State law will be complied with to the extent practicable. An e-mail was sent to Mr. Harry Atkinson of IDEM asking for any State of Indiana ARARs that may apply.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Failing to take, or delaying action will increase the potential that toxic hazardous substances will be released, thereby threatening the adjacent population and the environment.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this site is contained in the Enforcement Confidential Addendum.

The total U.S. EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be \$752,479.¹

$$(\$472,110 + \$10,000 \text{ [Headquarters]}) + (55.15\% \times \$472,110 + \$10,000) = \$752,479$$

¹Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

IX RECOMMENDATION

This decision document represents the selected removal action for the residential portion of the USS Lead Site located in East Chicago, IN. It was developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for the Site (Attachment 1). Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a removal and I recommend your approval of the proposed removal action.

The total removal action project ceiling if approved will be \$472,110. Of this, an estimated \$376,800 may be used for cleanup contractor costs. You may indicate your decision by signing below.

APPROVE  DATE: 1-22-00
Director, Superfund Division

DISAPPROVE _____ DATE: _____
Director, Superfund Division

Enforcement Addendum Attachments

1. Administrative Record Index
2. Environmental Justice Analysis
3. Enforcement Addendum
4. Detailed Cleanup Contractor Cost Estimate
5. Independent Government Cost Estimate

cc: D. Chung, U.S. EPA 5202G
M. Chezick, U.S. Department of Interior, w/o Enf. Addendum
E. Admire, IDEM w/o Enf. Addendum

BCC PAGE

(REDACTED 1 PAGE)

NOT RELEVANT TO THE SELECTION OF THE REMOVAL ACTION

ATTACHMENT 1

**ADMINISTRATIVE RECORD INDEX
USS LEAD
EAST CHICAGO, IN**



ATTACHMENT 1

U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL ACTION

ADMINISTRATIVE RECORD FOR USS LEAD SITE EAST CHICAGO, LAKE COUNTY, INDIANA

ORIGINAL
DECEMBER 7, 2007

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	04/28/06	U.S. EPA/ CRL	File	Generic Chain of Custody for the US Smelter Lead Refinery	26
2	05/02/06	U.S. EPA/ CRL	File	Generic Chain of Custody for the US Smelter Lead Refinery	17
3	05/26/06	U.S. EPA/ CRL	File	Review of Region 5 Data for US Smelter Lead Re- finery (ICP and GFAA Metals for Waters and Soils)	224
4	00/00/00	Micke, F., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum: Request to Conduct a Time Critical Removal Action at the Residential Portion of the USS Lead Site (PENDING)	

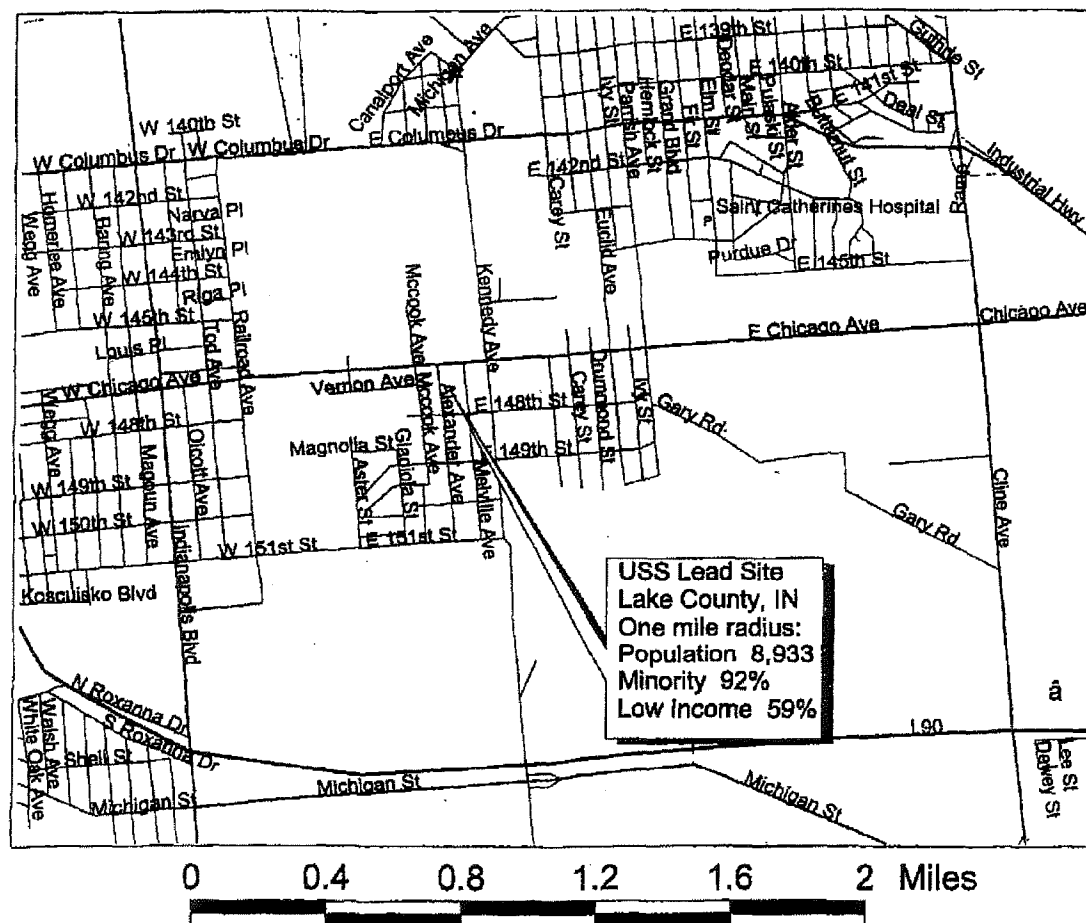
ATTACHMENT 2

**ENVIRONMENTAL JUSTICE
USS LEAD
EAST CHICAGO, IN**

Region 5 Superfund EJ Analysis

USS Lead Site

East Chicago, IN



State of Indiana averages:

Minority: 14%

Low Income: 29%

U.S. EPA Region 5
Environmental Justice Case Criteria
for State of Indiana

Minority: 28% or greater

Low Income: 58% or greater

Date of Map: 10/8/05

Source of Map: Census 2000 Database/
ArcView 3.0

ATTACHMENT 3

**ENFORCEMENT ADDENDUM
USS LEAD SITE
EAST CHICAGO, LAKE COUNTY, INDIANA**

(REDACTED 6 PAGES)

**ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY**

ATTACHMENT 4

DETAILED CLEANUP CONTRACTOR COST ESTIMATE
USS LEAD SITE
EAST CHICAGO, LAKE COUNTY, INDIANA

(REDACTED 1 PAGE)

ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY

ATTACHMENT 4

**INDEPENDENT GOVERNMENT COST ESTIMATE
USS LEAD SITE
EAST CHICAGO, LAKE COUNTY, INDIANA**

(REDACTED 1 PAGE)

**ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY**

ATTACHMENT XI

**SECOND AMENDED ACTION MEMORANDUM
DATED SEPTEMBER 12, 2011**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

US EPA RECORDS CENTER REGION 5



405465

12 SEP 2011

MEMORANDUM

DATE:

SUBJECT: Action Memorandum - Request for Approval and Funding for a Time-Critical Removal Action at the USS Lead Site, East Chicago, Lake County, Indiana (Site ID # 053J)

FROM: Fredrick A. Micke, On-Scene Coordinator
Emergency Response Branch 2 - Removal Section 3

THRU: Linda M. Nachowicz, Chief *Cheryl Del For LN*
Emergency Response Branch 2

TO: Richard C. Karl, Director
Superfund Division

I. PURPOSE

The purpose of this Action Memorandum is to request and document your approval to expend up to \$944,400 to conduct a time-critical removal action at the USS Lead Site located in East Chicago, Indiana. The proposed time-critical removal action herein will mitigate threats to public health, welfare and the environment posed by the presence of lead-contaminated soil on residential properties at the USS Lead Site by the proper excavation and off-site disposal of the lead contaminated soil. There are no nationally significant or precedent setting issues associated with the proposed response at this NPL site.

The Action Memorandum would serve as approval for expenditures by U.S. EPA, as the lead technical agency, to take actions described herein to abate the imminent and substantial endangerment posed by hazardous substances at the Site. The proposed removal of hazardous substances would be taken pursuant to Section 104(a)(1) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 USC 9604(a)(1), and Section 300.415 of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR 300.415.

II. SITE CONDITIONS AND BACKGROUND

CERCLIS ID: IND047030226
RCRA ID: None
STATE ID: None
Category: Time-Critical Removal

A. Site Description

1. Removal site evaluation

The Indiana Department of Environmental Management (IDEM) sampled some of the residential properties to the north of USS Lead in 1985. IDEM found elevated lead levels in these residential yards. In September of 1985, the Indiana State Board of Health found USS Lead in violation of state law and made the statement that the lead-contaminated soils may pose a risk to human health and the environment. IDEM referred the USS Lead facility to U.S. EPA for cleanup.

Since 1985, U.S. EPA's RCRA Corrective Action program has overseen the remediation and management of lead-contaminated soils within the boundaries of the U.S. Smelter and Lead Refinery, Inc. facility. The cleanup efforts at the facility included the placement of the contamination in a Corrective Action Management Unit (CAMU) and the remediation of portions of the on-site wetlands. In 2003, U.S. EPA sampled soils in the residential area north of USS Lead as a part of the RCRA Corrective Action investigation. These sampling results showed some yards to have high levels of lead contamination. Surface soil samples collected at 11 properties showed levels of lead exceeding 1,200 parts per million (ppm). The highest sample found had a lead level of 3,000 ppm. Most of the yards with the highest lead sampling results were in the southern region of the residential area. The RCRA Corrective Action program looked at the possible source of the off-site lead contamination and determined it was from various multiple industrial sources. The RCRA Corrective Action program referred the off-site contamination from the facility to the Superfund Program.

In 2008, U.S. EPA conducted a time-critical removal action to address the 11 properties with lead levels exceeding 1,200 ppm which were identified as part of the RCRA Corrective Action investigation. In all, 13 properties were remediated during this removal action. A final Pollution Report for this action was issued on November 18, 2008.

Additional sampling was conducted during the RI in 2009 and 2010. As a result of the sampling, U.S. EPA discovered the 14 additional areas with lead levels exceeding the removal action level of 1,200 ppm. Approximately half of the areas to be remediated are located within a public housing development. The public housing development is located on the former site of an Anaconda Lead Products facility.

2. Physical location

The USS Lead Site includes the residential area north of the US Smelter and Lead (USS Lead) facility in East Chicago, Indiana. The geographical coordinates for the Site are 41.625676 North latitude and -87.461557 West longitude. The public housing portion of the removal action is located in the southwest corner of the residential area. It is bounded by Magnolia Lane, Gladiola Ave., E. 151st Street, and Aster Ave. The remaining areas with elevated lead levels are scattered throughout the central and eastern portions of the residential area in East Chicago, Indiana.

The area surrounding the USS Lead Site was screened for Environmental Justice (EJ) concerns using Region 5's EJ Assist Tool (which applies the interim version of the national EJ Strategic Enforcement Assessment Tool (EJSEAT)). Census tracts with a score of 1, 2, or 3 are considered to be high-priority potential EJ areas of concern according to EPA Region 5. The USS Lead Site is in a census tract with a score of 1. Therefore, Region 5 considers this site a high-priority potential EJ area of concern. Please refer to the attached analysis for additional information (Attachment 1).

3. Site Characteristics

The USS Lead Site includes about 1200 homes, a small number of parks, open space as a part of the railroad right-of-way, schools, and public buildings. Some properties in the residential area have levels of lead elevated above U.S. EPA cleanup levels. The likely source for the lead contamination is the USS Lead facility and other industrial sources in the East Chicago, Indiana area.

The USS Lead facility was a primary and secondary smelter of lead in the East Chicago, Indiana area. It began operations around 1906 and ended in 1985. From about 1920 until 1973, USS Lead was a primary smelter of lead. This included a refining process to create high quality lead free of bismuth. From 1973 until its closure in 1985, USS Lead was a secondary smelter and a reprocessor of car batteries. The secondary refinery operations included: battery breaking with tank treatment of spent battery acid at a rate of 16,000 gallons per day; baghouse dust collection with storage in on-site waste piles of up to 8,000 tons of flu dust; and blast furnace slag disposal, which was deposited in the wetland adjacent to and along the southern boundary of the facility. Secondary lead recovery operations ceased in 1985. USS Lead paid out a settlement to fund the operation and maintenance at the closed and remediated facility in a Resource Conservation and Recovery Act (RCRA) Corrective Action agreement with the U.S. EPA.

The East Chicago neighborhood around USS Lead has been an area of intense industrial activity dating back to the early 1900's. Smelting and other metal related processes dominated the activities in the area. Many of the companies involved in metal work included lead-related processes which operated smelting and lead compound production facilities. As a part of their activities, the companies in the area generated lead product or waste in a particulate form. The potential emission sources at these facilities included: furnace stacks, waste piles, and spills of

lead products. Chronic airborne pollution from USS Lead and other facilities in the area is the probable source of the lead contamination in the area.

4. Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant

The threat is presented by the presence of lead-contaminated soil. The presence of lead contaminated soil in residential yards at concentrations up to 5,993 ppm, which is above the regulatory removal action level of 1,200 ppm, makes this a time-critical removal action.

U.S. EPA has concluded that there exists a potential for exposure of humans to lead, a hazardous substance, because of the presence of lead-contaminated soil in residential neighborhoods at the Site. Lead exposure via inhalation and/or ingestion can have detrimental effects on almost every organ and system in the human body. Off-site migration of the documented hazardous waste would greatly increase the potential exposure to nearby human populations, animals, or the food chain.

5. NPL status

The USS Lead Site was listed as a Superfund site on the national priorities list (NPL) on April 8, 2009. U.S. EPA began the RI on June 26, 2009. During December 2009 and August 2010, U.S. EPA contractors sampled yards in residential areas and background locations. Currently, U.S. EPA is revising the RI and U.S. EPA contractors are drafting the Feasibility Study. U.S. EPA expects to select a remedy by fall 2012, and begin the Remedial Action in 2013.

6. Maps, pictures and other graphic representations

See Attachment 5—Properties With Lead > 1,200 mg/kg in Soil 0-6"

B. Other Actions to Date

1. Previous actions

On January 22, 2008, U.S. EPA signed an action memorandum to conduct a time-critical removal action to address the properties with lead levels exceeding the removal action limit of 1,200 ppm. These properties were identified based on sampling data collected during the RCRA Corrective Action investigation. This removal action began on June 9, 2008, and involved the excavation and off-site disposal of lead contaminated soil from 13 residential properties. A second action memorandum for the Site was signed on August 13, 2008, to raise the project ceiling in order to complete the ongoing, time-critical removal action. In total, 1838 tons of lead-contaminated soil were removed and disposed of at an approved landfill. Excavated areas were backfilled with clean fill and seeded. This removal action was completed on September 25, 2008, and the final Pollution Report issued on November 18, 2008.

2. Current actions

No current actions by private or local/state governments are underway at the Site. As previously mentioned, U.S. EPA is revising the Remedial Investigation and drafting the Feasibility Study.

C. State and Local Authorities' role

1. State and local actions to date

The State of Indiana does not have the financial resources to eliminate the threat posed by lead-contaminated soils. The City of East Chicago, Indiana has taken no action.

III. THREAT TO PUBLIC HEALTH OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Conditions at the Site may pose an imminent and substantial endangerment to public health or welfare or the environment, based upon factors set forth in the National Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) Section 300.415 (b)(2). These conditions include:

Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants.

Lead contaminated-soil is situated throughout the residential community near the Site. Samples taken by U.S. EPA of the soil in specific residential properties during the RI showed elevated concentrations of lead. Surface soil samples collected at 14 properties showed levels of lead exceeding the removal action level of 1,200 ppm. The highest sample found had a lead level of 5,993 ppm. The residential yards have high accessibility to sensitive populations including young children and pregnant women. Sensitive populations such as children under the age of 7 years and pregnant women live in many of these residences. Adults and children may be exposed to high levels of lead from normal foot traffic, yard work, and play.

The effects of lead exposure are more severe for young children and the developing fetus through exposure to a pregnant woman. The harmful effects of lead include premature births, lower birth weight, decreased mental ability in the infant, learning difficulties, and reduced growth in young children. In adults, lead increases blood pressure, induces anemia as a result of the inhibition of hemoglobin synthesis, decreases reaction time, affects memory, and damages the male reproductive system. Lead is also considered by U.S. EPA to be a class B2 or probable human carcinogen. Reference: ATSDR. 1993. Toxicological Profile for Lead. Agency for Toxic Substances and Disease Registry, Division of Toxicology. Atlanta, GA. U.S. Department of Health and Human Services, Public Health Service.

Elevated levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface.

U.S. EPA sampling verified many of these results. There are elevated levels of hazardous wastes present at the residential areas surrounding the USS Lead Site. Surface soil samples (0-6") collected at 14 properties as part of the RI showed levels of lead exceeding the removal action level of 1,200 ppm. The highest sample found had a lead level of 5,993 ppm. Sensitive populations, including children under 7 years old and pregnant women, may become exposed through normal foot traffic, yard work, or play. Additionally the presence of the contaminants near the surface allows for the migration of the contaminant from residential yards via wind, rain or manual dispersion.

Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

The Remedial Investigation documented surface soil samples with elevated total lead concentrations of up to 5,993 ppm. Heavy rains may cause further migration of contaminants off site. Winds could cause dust particles containing heavy metals to continue to migrate into the surrounding community. These weather conditions could result in a continued release of the hazardous wastes described herein to the surrounding soil, air and surface water.

The availability of other appropriate federal or state response mechanisms to respond to the release.

The State of Indiana does not have the financial resources to eliminate this threat.

IV. ENDANGERMENT DETERMINATION

Given the Site conditions, the nature of the known and suspected hazardous substances on Site, and the potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed Action Description:

Removal action activities at this Site will include, but are not limited to, excavation and proper disposal of lead-contaminated soils. The removal action for this Action Memorandum will conduct lead-contaminated soil removals at five East Chicago Public Housing addresses [REDACTED] and [REDACTED], [REDACTED] and [REDACTED], and [REDACTED] and 9 residential properties [REDACTED], [REDACTED], [REDACTED], [REDACTED] and [REDACTED].

_____, _____, and _____). In addition, two properties that were not remediated in 2008 because of access issues will be remediated during this removal action if access can be obtained (_____, _____, and _____).

The response actions described in this memorandum directly address actual or potential releases of hazardous substances on Site, which may pose an imminent and substantial endangerment to public health, or welfare, or the environment. Removal activities on Site will include:

- a) Develop a Work Plan for the lead-contaminated soil assessment of the Site.
- b) Develop and implement a site health and safety plan.
- c) Develop and implement an air monitoring plan.
- d) Develop and implement site security measures.
- e) Conduct land surveying to the extent necessary to establish a grid system to locate all property boundaries, special features (pipes, storage tanks, etc.), and sample locations.
- f) Based upon soil results, remove, transport and dispose of all characterized or identified hazardous substances, pollutants, wastes or contaminants at a RCRA/CERCLA approved disposal facility in accordance with the U.S. EPA off-site rule.
- g) Obtain site access to conduct a removal action from those residences which exceeded 1,200 ppm lead as determined by U.S. EPA's RI sampling. Lead is considered the main contaminant of concern. Removal action levels for lead are 400 ppm for the residential properties, as noted in guidance from ATSDR. Impacted residences will be cleaned to these action levels.]
- h) Backfill excavated areas with clean material and topsoil with seeding as needed.

The removal action will be conducted in a manner not inconsistent with the NCP. The OSC has initiated planning for provision of post-removal Site control consistent with the provisions of Section 300.415(I) of the NCP and the response actions proposed herein are consistent with any long-term remedial actions which may be required. However, elimination of all threats presented by hazardous substances in the vicinity of the residences is expected to minimize the need for post-removal Site controls.

Off-Site Rule

All hazardous substances, pollutants, or contaminants removed off-site pursuant to this removal action for treatment, storage, and disposal shall be treated, stored, or disposed of at a

facility in compliance, as determined by U.S. EPA, with the U.S. EPA Off-Site Rule, 40 C.F.R. § 300.440.

2. Contribution to Remedial Performance:

The proposed action will not impede future responses based upon available information.

3. Engineering Evaluation/Cost Analysis (EE/CA):

Not Applicable

4. Applicable or Relevant and Appropriate Requirements (ARARs):

All applicable or relevant and appropriate requirements (ARARs) will be complied with to the extent practicable. An e-mail was sent to Mr. Harry Atkinson of IDEM asking for any State of Indiana ARARs that may apply.

5. Project Schedule:

The activities outlined in this action memo are estimated to take sixty calendar days to complete.

B. Estimated Costs

REMOVAL ACTION PROJECT CEILING ESTIMATE	
<u>Extramural Costs:</u>	
<u>Regional Removal Allowance Costs:</u>	
Total Cleanup Contractor Costs	\$706,000
(This cost category includes estimates for ERRS, subcontractors, Notices to Proceed, and Interagency Agreements with Other Federal Agencies. Includes a 20% contingency)	
<u>Other Extramural Costs Not Funded from the Regional Allowance:</u>	
Total START, including multiplier costs	\$81,000
Total Decontamination, Analytical & Tech. Services (DATS)	\$ 0
Total CLP	\$ 0
Subtotal	\$ 81,000
Subtotal Extramural Costs	\$787,000
Extramural Costs Contingency	\$157,400
(20% of Subtotal, Extramural Costs rounded to nearest thousand)	
TOTAL REMOVAL ACTION PROJECT CEILING	\$944,400

The response actions described in this memorandum directly address actual or threatened releases of hazardous substances, pollutants or contaminants at the facility which may pose an imminent and substantial endangerment to public health and safety, and to the environment. These response actions do not impose a burden on the affected property disproportionate to the extent to which that property contributes to the conditions being addressed.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Given the Site conditions, the nature of the hazardous substances and pollutants or contaminants documented on Site, and the potential exposure pathways to nearby populations described in Sections II, III and IV above, actual or threatened release of hazardous substances and pollutants or contaminants from the Site, failing to take or delaying action may present an imminent and substantial endangerment to public health, welfare or the environment, increasing the potential that hazardous substances will be released, thereby threatening the adjacent population and the environment. Delayed or non-action may result in increased likelihood of external exposure, inhalation, ingestion or direct contact to human populations accessing and working on the Site.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

For Administrative purposes, information concerning confidential enforcement strategy for this Site is contained in the Enforcement Confidential Addendum.

The total U.S. EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be \$1,618,485¹

$$(\$944,400 + \$50,000) + (62.76\% \times \$994,400) = \$1,618,485$$

¹Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 27, 2008. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

IX. RECOMMENDATION

This decision document represents the selected removal action for the USS Lead Site, East Chicago, Lake County, Indiana. It has been developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based upon the Administrative Record for this Site (Attachment 2). Conditions at the Site meet the NCP Section 300.415(b)(2) criteria for a removal action and I recommend your approval of the proposed removal action.

The total removal action project ceiling if approved will be \$944,400. Of this, an estimated \$863,400 may be used for clean-up contractor costs. You may indicate your decision by signing below.

APPROVE: _____


Director, Superfund Division

DATE: _____

9/12/2011

DISAPPROVE: _____

Director, Superfund Division

DATE: _____

Enforcement Addendum

Figures:

See Attachment 5

Attachments

1. Environmental Justice Analysis
2. Index to the Administrative Record
3. Detailed Contractor Cost Estimate
4. Independent Government Cost Estimate
5. Properties With Lead > 1,200 mg/kg in Soil 0-6"

cc: Sherry Fielding, U.S. EPA, 5202-G
(email: Sherry Fielding/DC/USEPA/US)
M. Chezik, U.S. DOI, w/o **Enf. Addendum**,
(email: michael_chezik@ios.doi.gov)
G. Hauer, IDEM, w/o **Enf. Addendum**
(email: ghauer@idem.in.gov)

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ENFORCEMENT ADDENDUM

**USS LEAD SITE
EAST CHICAGO, INDIANA**

**ENFORCEMENT CONFIDENTIAL
NOT SUBJECT TO DISCOVERY**

(REDACTED 1 PAGE)

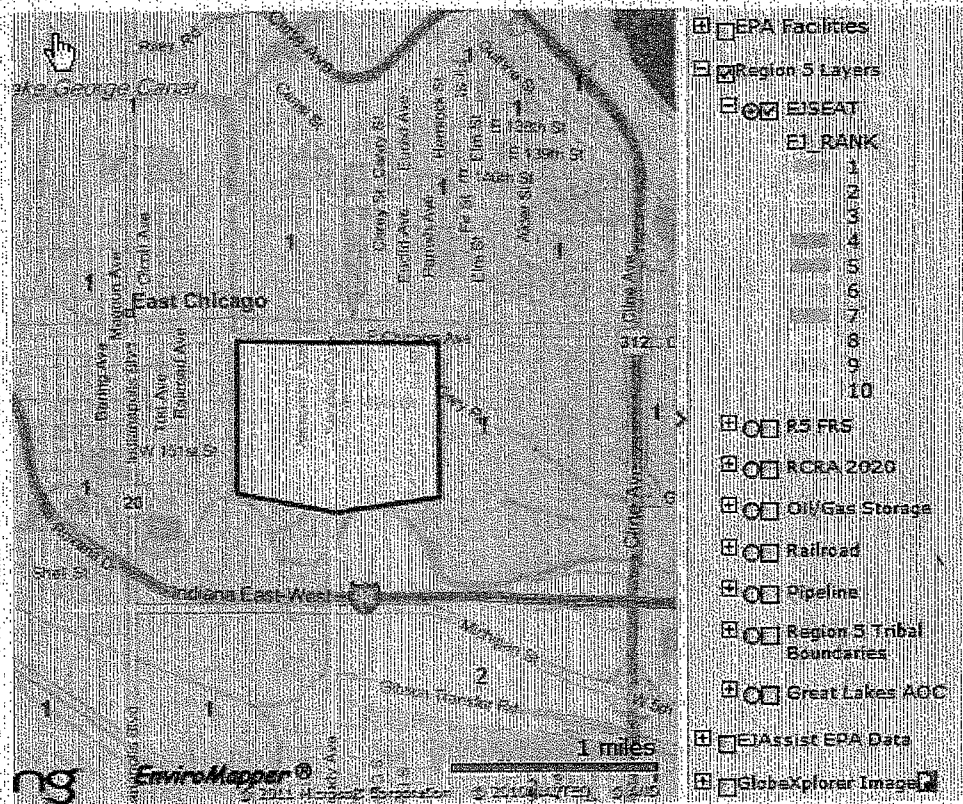
Attachment 1

Superfund EJ Analysis for USS Lead Site, East Chicago, IN

The area surrounding the USS Lead Site was screened for Environmental Justice (EJ) concerns using Region 5's EJ Assist Tool (which applies the interim version of the national EJ Strategic Enforcement Assessment Tool (EJSEAT)). Census tracts with a score of 1, 2, or 3 are considered to be high-priority potential EJ areas of concern according to EPA Region 5. The USS Lead Site is in a census tract with a score of 1 (Figure 1). Therefore, Region 5 considers this site to be a high-priority potential EJ area of concern.

Figure 1.

USS Lead Site Map Showing EJ SEAT Values For Surrounding Area



ATTACHMENT 2

ADMINISTRATIVE RECORD INDEX

ATTACHMENT

U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL ACTION

ADMINISTRATIVE RECORD FOR USS LEAD SITE EAST CHICAGO, LAKE COUNTY, INDIANA

ORIGINAL
JANUARY 22, 2008

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	04/28/06	U.S. EPA/CRL	File	Generic Chain of Custody for the US Smelter Lead Refinery	2
2	05/02/06	U.S. EPA/CRL	File	Generic Chain of Custody for the US Smelter Lead Site	17
3	05/26/06	U.S. EPA/CRL	File	Review of Region 5 Data for US Smelter Lead Refinery (ICP and GFAA Metals for Waters and Soils	224
4	01/22/08	Micke, F., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum: Request to Conduct a Time Critical Removal Action at the Residential Portion of the USS Lead Site (PORTIONS OF THIS DOCUMENT HAVE BEEN REDACTED/SDMS ID:	16

UPDATE #1 AUGUST 13, 2008

1	06/17/08	Micke, F., U.S. EPA	Distribution List	Pollution Report (POLREP) No. 1 - Initial for the USS Lead Site (SDMS ID: 302347)	2
2	08/13/08	Micke, F., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum #2: Request for a Ceiling Increase to Complete the Time Critical Removal Action at the USS Lead Site (PORTIONS OF THIS DOCUMENT HAVE BEEN REDACTED/SDMS ID: 299818)	30

UPDATE #2 AUGUST 30, 2011

1	12/22/09	Sultrac	U.S. EPA	Excel File: USS Lead Sultrac Pb Results by Property	
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<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
2	07/00/11	U.S. EPA	File	Figure: Sultrac Properties with Lead > 1,200 mg/kg in Soil 0-6"	1
3	00/00/00	Micke, F., U.S. EPA	Karl, R., U.S. EPA	Action Memorandum #3 - (Amendment) Determination of Threat to Public Health and or the Environment at The USS Lead Site (PENDING)	

ATTACHMENT 3

**U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION**

DETAILED CLEANUP CONTRACTOR AND START ESTIMATE

**USS LEAD SITE
EAST CHICAGO, INDIANA**

JULY 2011

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ATTACHMENT 4

**U.S. ENVIRONMENTAL PROTECTION AGENCY
REMOVAL ACTION**

**INDEPENDENT GOVERNMENT COST ESTIMATE
FOR
USS LEAD SITE
EAST CHICAGO, INDIANA**

JULY 2011

(REDACTED 1 PAGE)

ATTACHMENT 5

Properties With Lead > 1,200 mg/kg in Soil 0-6"